e Iron

A Review of the Hardware, Iron and Metal Trades.

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above. The valves and levers for reversing the passages are placed at 11, while the chimneys receiving the final products of combustion are marked 12. The tapping-holes of the two furnaces converge toward the ingot pit 13, which, as usual, is place I below the floor level, and is commanded by a ladle crane, 14, and three ingot cranes, 15. The former are controlled from the pulpi

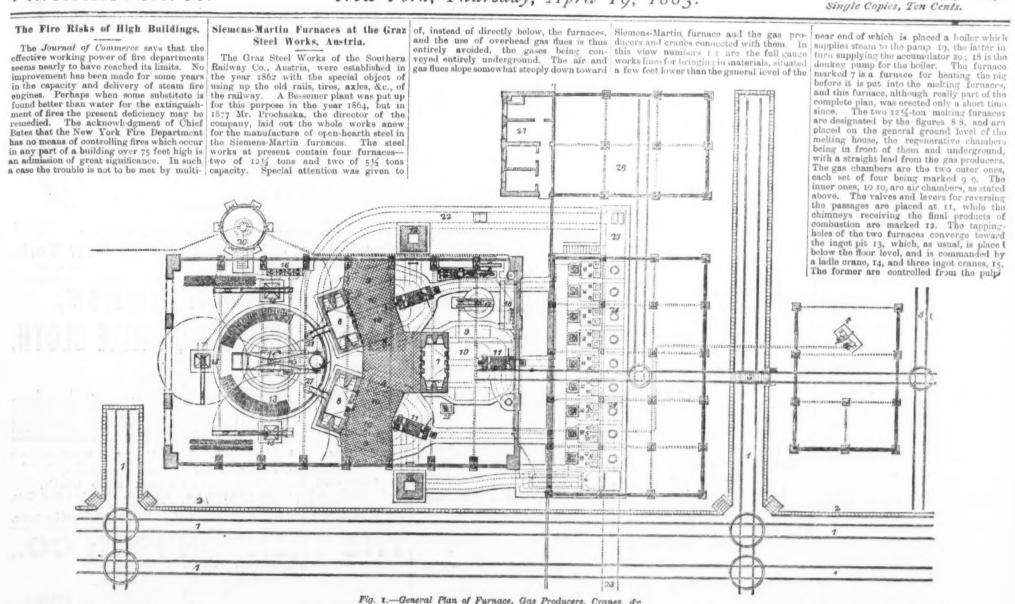


Fig. 1.—General Plan of Furnace, Gas Producers, Cranes, &c.

plying engines. Twenty machines will throw water upon and into a fire no higher than one machine. The extreme limit at which the apparatus can be made really useful is about 65 feet. It follows from these facts that all buildings (especially those destined to be occupied by human beings or to contain combustible materials inquantity) should be rendered fire-proof at least from a hight of 65 feet upward. It may be said that all structures rising beyond that hight should be fire-proof throughout, and this would be a precaution on the side of safety. But if the upper stories of the tallest buildings were incombustible, there would be a sense of security which is not now felt against a repetition of the Chicago and Boston fires in New York.

Referring again to the excellent reports and recomendations lately made to the Board of Underwriters, we find that there are only five strictly first-class fire-proof buildings in the great dry-goods district. The number over 70 feet high is 562, and of these 170 are over 80 feet high, 32 over 90 feet high, seven over 100 feet high, and one towers to 125 feet. Here, then, are numerous buildings, the upper stories of which, if in flames,

125 feet. Here, then, are numerous buildings, the upper stories of which, if in flames, would defy the best efforts of the Fire Dewould defy the best efforts of the Fire Department. A fire once thoroughly started in that district, with a gale blowing at the time, would sweep freely over these inaccessible roofs until checked (if at all) by a street space or by the blowing up of some buidings in the path of the conflagration. As the tendency of architecture in New York is toward structures of the loftiest class—for apartment houses and offices and other purposes—the necessity of making them fireposes—the necessity of making them fire-proof becomes more urgent. It is a very serious matter, to which neither the Fire Department nor the Underwriters' Board attaches no small importance. We are not surprised that the insurance companies are debating appropriation of the surprised that the insurance companies are debating a proposition to charge in an in-creasing ratio for each 5 feet above 65 of hight, except where buildings are absolutely

fire-proof.

We commend the statements of Chief
Bates and of the underwriters to the attention of the Senate committee who are now considering the scheme of a new building The builders and architects are mak ing themselves heard before the committee with suggestions. Their ideas are valuable, but do not cover the whole subject. with suggestions. Their ideas are valuable, but do not cover the whole subject. Owners and builders are naturally not in favor of making those large outlays which alone can give the fire-proof quality to the whole or any part of a structure. And architects may be expected to sympathize with owners and builders. The vast interests of the metropolis, which are all at the hazard of fire, should far outweigh those of the comparatively few who erect and own buildings in and out of the dry-goods distinctions and out of the dry-good sing and out of the dry-good single and the mixing of gas and air the actual transportation of materials within regard to their durability. The regeneration of the contents of the separating the works, the material being collected on the works, the material being of some in the result. The method adopted is to run as structed, made several changes in the mixing of gas and air the actual transportation of materials within regard to their durability. The regenerating the works, the material being collected on the works, the material being collected on the property strictly fire
The production of the dry-good singular to pass through the property strict

Fig. 2.—Section Along the Line I K of Fig. 3. 1

r6 on one side of the house. The shutes 2r carry off the slag into the slag canals 22 and 23, while the stores of clay and sand are kept at 26, 27 being the laboratory and testing-room. Figs. 2, 3 and 4 show the construction and relative position of the melting furnaces and regenerators, with their flues on a somewhat larger scale, Fig. 2 representing a section along the line I K, and Fig. 4 a section along the line C D, of Fig. 3. The latter is a plan of one of the larger furnaces and regenerators. A feature of considerable interest in connection with these furnaces is their extraordinary durability, which is ascribed by Mr. Prochaska to the arrangement of the gas and air flues, which, as already stated, slope inward and downward to the hearth, and are kept entirely separate, so that the gas and air do not mix until they actually have entered the furnace. An air space, Fig. 3, between the flues keeps the middle wall from destruction. It will also be noted that the roof of each furnace is arched upward instead of being tipped down, so as to more of less follow tha line of the bed, and this is considered to have greatly contributed to the generally successful result. It is stated that in the different greatly contributed to the generally successful result. It is stated that in the different furnaces at these works from 400 to 600 consecutive charges have been run from one furnace without stoppage for repairs, and one of them recently ran 640 charges con-

The gas is produced solely from brown coal or lignites containing from 25 to 28 per cent. of water, no sulphur, and giving from 2 to 3 per cent. of ash. The deficiency of this fuel in heating qualities makes the time this fuel in heating qualities makes the time for working a charge somewhat long—from nine to ten hours. The charge consists of about 30 per cent. of pig 'one-third gray and two-thirds white) and 70 per cent. of old iron and steel, in the shape of crop ends, scrap iron, old plate, &c., which is melted in three installments, and only the larger pixes are previously warmed, all the smaller material being put in the furnace cold. The melting is continued until the carbon is down to 0.12 or 0.14 per cent., and then spiegel is added, so as to bring the cerbon up to the required amount. A very complete spiegel is added, so as to bring the cerbon up to the required amount. A very complete system of tests during the work has been arranged and is carried out. The two small furnaces produce about 8000 tons of steel per annum, and the two larger ones about 16,000, thus making in all 24,000 tons. For every ton of ingots there are used 667 pounds of pig, 1595 pounds of old iron or steel and 35 pounds of spiegel. For the same quantity, 1225 pounds of coal are used in the generator and 425 pounds

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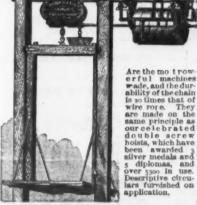
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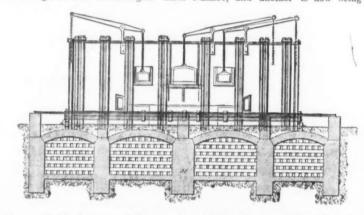
about 0.6 per cent. of carbon, and can be used for tool steel.

In connection with the ingot crane of the

little pot furnace, and then pour out at once in the molds. For four years past all the mill rolls have been made in this way, as well as a large number of other castings.

The quantity of addition to a full ladle of with the accumulator pressure in the mains. time maintain an uninterrupted connection with the accumulator pressure in the mains. The system had been extended to machinery

Among the different applications of these machines the author mentioned the riveting of locomotive boilers, the fastening of rivets in gun carriages and in agricultural machinfor riveting ships. The substitution of hydraulic machinery for punching and shearing metals had been more gradual, but it had proved economical, and had been employed In connection with the ingot crane of the two large furnaces, Mr. Prochaska has adopted the plan of filling the ingots (two at a time), not from the ingot ladle itself directly, but by the use of an intermediate vessel intended to break the shock of the metal cast as it generally is. This vessel is slung from the ingot ladle, and naturally lies just below it, between it and the ingot molds. The ingots are allowed to cool before taking them to the rolling mills. The heating furnaces for the cogging mill, of which there are two, are 26 feet 3 inches long and slope downward throughout their whole length. Each



Siemens-Martin Furnaces at the Graz Steel Works. - Fig. 4 .- Section Along Line C D of Fig. 3.

which are, of course, repeatedly turned over and uniformly heated as they pass from one end to the other. From 70 to 80 tons of ingots can be passed through each furnace in 24 hours. The furnaces are partly heated by gas and partly by the direct use of lignite. The cogging mill is 3-high, with hydraulic tables, while the finishing mill is only 2-high and not reversing, the rails being sent back over the top. The engine for the cogging mill has cylinders 31½ inches in diameter and 49.1 inches stroke, and is provided with Sulzer valves worked by cam gearing designed by Mr. Prochaska, and so arranged that the attendant can alter the expansion as the rolls require more or less power.

Besides the chemical laboratory, the works have a testing department containing a Werder machine with a capacity of 30 tons.

Werder machine with a capacity of 30 tons per square inch. The establishment also contains engineers' workshops for dealing with the castings and other products, but these require no special attention. It should be mentioned, however, that Mr. Prochaska has very cleverly utilized old rails for col-umns, rafters and every conceivable purpose

Hydraulic Machinery.

The productive power and efficiency of machine tools and of other labor-saving appliances worked by hydraulic pressure formed the subject of an interesting paper recently read before the British Institution of Civil Engineers by Mr. Truedell. The author in the course of his paper stated that some years ago he had occasion to design a machine which was required to exert a great pressure in a confined space, at a consider-

afforded by a small portable hydraulic apparatus for fixing the ends of boiler in tube plates, the pressure of water employed varying from 1 to 1½ tons per square inch. Owing to the introduction of high steam pressures, the recattlings of marine boilers had to be considerably increased, but the mechanical riveting machines formerly in use were mostly inadequate to make steamtight joints. In 1865 the author designed a hydraulic riveting plant to overcome the difficulty. It consisted of pumps, an accumulator and a riveting machine, and in operation was seven times more economical than handwork; moreover, its surplus plates, the pressure of water employed varypower was available for hydraulic presses for "setting," or joggling, angle and tearial was much less strained, and that the material was much less strained, and that the wear and tear of the molds and dies was greatly reduced, besides which the machines were moveable. Previous attempts to perform similar work by postable with the machines and its application to rotary machines might oven become as eccommical as any other. The simplicity and small number of parts in all hydraulic machines. work by portable machines small number of parts in all hydraulic machines form similar work by portable machines chine tools was a source of great economy.

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ingot is entered at the upper end and is structed at Brest from the author's designs, worked down until it gets to the bottom end, from which it is removed to be cogged, the control of t would depend greatly on the skill brought to bear in making the dies and molds. As to the productive power and efficiency of mathe productive power and efficiency of machine tools generally, and the mode of increasing them, the author observed that the cost of manufacturing depended upon the productive power of the tools employed, and upon the possession of facilities for transporting the material to and from them. At present a large amount of lifting was done by manual labor, in which there was room for great improvement. Owing to the necessity great improvement. Owing to the necessity hitherto of using belting or gearing for work-ing them, power cranes had been applied to machine tools as a means for increasing their output only to a limited extent. The author pointed out that by the adoption of rortable pointed out that by the adoption of portable hydraulic machine tools a great saving in floor space might, moreover, be effected. The introduction of hydraulic capstans had practically annihilated space in dock and railway yards, and as the haulage of a given weight on a good road required less power than lifting it, an extended application of such machinery to engine works was to be anticipated. The suitability of this system to increasing the output of large to be anticipated. The suitability of this system to increasing the output of large engineering shops and shipyards was evident, and safety in lifting was insured in hydraulia cranes by the impossibility of workmen putting on them a greater load than they were calculated to bear.

So far as the increased productive power.

So far as the increased productive power and efficiency obtainable by the employment of hydraulic pressure for working machine tools is concerned, the author observed that the power necessary in a hydraulic system to pump water into the accumulator was nearly always obtained from a steam en-gine; but even at this early stage the hy-draulic system, by the use of the accumul-lator allowed of a considerable reduction in machine which was required to exert a great pressure in a confined space, at a considerable resure in a confined space, at a considerable result in a confined space, at a considerable result in a confined space, and space and to be capable of doing a large amount of work efficiently without the intervention of skilled labor. Such conditions were of common occurrence, and in this instance all were successfully fulfilled by the employment of hydraulic pressure. The paper was an archifection of the subject of the application of the subject of the application of the auditor was readily always obtained from a steam engine; but even at this early stage the hydraulic system, by the use of the accumulator was a size of the motor. A comparatively small prime mover running continually can store upsufficient energy to meet any sudden demand from even the largest of the arcumulator was a carrylification of the subject of the application of the subject of the accumulator was a considerable reduction in the size of the motor. A comparatively small prime mover running continually can store upsufficient energy to meet any sudden demand from even the largest of the motor. A comparatively small prime mover running continually can store upsufficient energy to meet any sudden demand from even the largest of the motor. A comparatively small prime mover running continually can store upsufficient energy to meet any sudden demand from even the largest of the motor. cessfully fulfilled by the employment of hydraulic pressure. The paper was an amplification of the subject of the application of this power to actualing machine tools and other labor-saving appliances in engineering works, and was divided under three heads, namely, the introduction and development of hydraulic-pressure machine tools; the productive power and efficiency of machine tools generally and the modes of increasing them, and the increased productive power and efficiency obtainable by the employment of hydraulic pressure for working nachine tools and other labor-saving appliances. Reference was made to the unpublished experience existing on these questions.

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performing such an operation as punching, the machine was moving at its lowest speed and friction was at a minimum whe work was being done. Again, hy Again, hydraulic machines consumed no power except when actually doing work, while it was not unusual in a machine shop to see all the shafting running in order to drive a small tool at its extremity. With hydraulic machines it was immaterial whether the machine was 2 the exact quantity of water necessary to perform the operation was consumed. In conclusion, the author stated that, apart from questions of economy, attention might be directed to several of the advantages arising from the applications of hydrolikes. ing from the application of hydraulic power to special cases. In riveting machinery it rendered it possible in one and the same machine to close the plates with a steady pressure, to fill the rivet-hole without forcing the metal of the rivets in between the plates, and to give the metal a sharp blow. Not only could the heaviest machine be lifted, but the machines could be attached to their work. In punching and shearing machinery much greater accuracy was insured from the perfect control of the moving punch or knife, the descent of which could be arrested even after it had touched the plate. Steel plates were less injured when punched by steady hydraulic pressure. Hydraulic ounching and shearing machines, moreover required no foundations, and could be readily taken on board ship, thus saving much car-rying to and fro of plates. It was often desirable to follow up the effects of a sharp blow by maintaining a continued steady pressure. This was illustrated by the author, who described an "impact" accumulator, and pointed out the difference of effect of a numpointed out the difference of effect of a number of light blows, as compared with one he v rone, in the case of hydraulic riveting. The indirect advantages due to the uniformity of all the work applied also to the flanging machinery, and, in fact, to everything pass ng through dies and blocks. He thought that even small firms might find it advantageous to combine in the erection of a common pumping station, and so to obtain many of the ing station, and so to obtain many of the economical benefits due to carrying out operations on a large scale

Gaseous Fuel for Boilers.

In some particulars the use of gascous fuel In some particulars the use of gaseous fuel under boilers has been a well-established practice for many years. Waste gas from blast-furnace stacks has been thus employed from a very early day in the history of the iron manufacture in this country. This waste gas cannot compare very favorably with the gas which would have to be furnished for general public use as a fuel gas, for, npart from its absolute chemical composition (which alone would bar it from such use), it carries with it from the interior of the furnace a fume or fine ash, which is very the furnace a fume or fine ash, which is very persistent in its refusal to be washed or filtered out. Hence all, or nearly all, the de-tails of the boiler house at blast furnaces are changed from what is found to be desirable and economical in other general use. The boilers themselves, in the large majority of cases, are comparatively small in diameter and very long, the external surface of the shell alone being used as heating surface. The difficulty—nay, impossibility—of cleaning them thoroughly from this light, flocculent dust prevents the use of any tubes or other form of internal heating surface, so that even for a moderate total capacity of boilers the plant becomes quite extensive, with the needful lines of pipes for steam, for feed-water and for blowing off.

Hence, in the introduction of gas for

general heating purposes in factories, and in similar places for which the demand would not be so great as to reach beyond the probable capacity of a public works for its supply, the whole problem opens itself as a fresh, almost untrodden, field to the engineer. The list of devices for burners and for supplementary fixtures for gas furnaces is already an extensive one, but the actual use, on an important working scale and under the rigid conditions which a metermeasured supply of gas would compel, is very limited. The ingenuity of designers will therefore be sure to be drawn upon again to a certain extent in the former lines, but the chief requirements, to which their work will undoubtedly be held very rigidly, are certain to lie in the direction of very close economy, or, more correctly, in the direction of providing for an exact knowledge of the work done, which, as has been so often said, is the foundation stone in such matters of all economical working. Some of the childish disputes as to quality of coal furnished will be relieved when gas is brought in from works sending out a product measured by millions daily, and so, also, will there be an end to the statements,

measured by millions daily, and so, also, will there be an end to the statements, which are pretty hard reading even in an advertisement, that waste heat can be utilized under a boiler after the "Siemens method" of melting steel.

It goes almost without saying that, so far as the art of gas-making has yet advanced in the industrial world, the only gas likely to be distributed in pipes, in the ordinary sense in which distribution is spoken of, is the so-called "water-gas," for the manufacture of which some very large producers are already in successful operation. This element has the remarkable quality of being a purer fuel than any other now available for industrial use—even wood itself, now so rarely employed, hardly excepted. It is also a favored material, in that its quality can be controlled or assured very completely by the convenience of the machinery or the fixtures by which the working of the apparatus is carried on. In fact, the development of the water-gas producer, which is still advancing, is in a very important sense the adaptation of machinery and all the accurate adjustments or manipulations which machines permit to an art in itself simple enough, but, as practiced for many years, crude in its apparatus and as thoroughly conservative and non-progressive as any art yet known to man. These general considerations have no direct bearing upon the exact topic of this note, but the practicability of the use of no direct bearing upon the exact topic of this note, but the practicability of the use of gas under boilers, and in similar large measures in a public way, depends absolutely upon the cost of the gas as well as upon the character and the perfectness of the lixtures, and hence a discussion of one involves the other

at nearly every turning.

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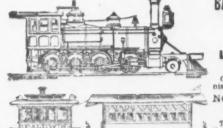
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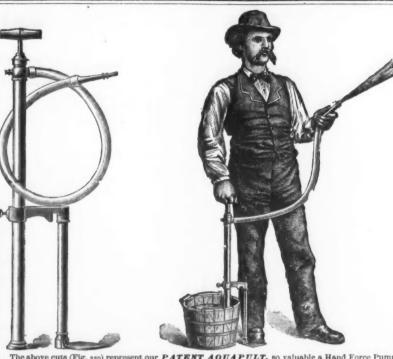
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On the Crystallization of Iron and

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The test-tube, crucible and retort, the microscope and the testing machine, have

sist an infinite number of repetitions of the normal strains and shocks which they are designed to resist. But in all cases our cal-culations are based upon more or less sup-posititious properties of the material—that is, if we use tough and fibrous iron or steel in the manufacture of a part or member of a structure, we suppose that the finished prod-uct, after undergoing all the manipulations by which it was fashioned into its ultimate shape, still possesses the strength and all the distinctive features of trucks and fibrour distinctive features of tough and fibrous iron or steel.

And so it comes that unexpected and perhaps disastrous failures in well-designed structures are frequently explained on the ground of changes in the internal structure of the material, most prominent among which is the alleged crystallization of iron and steel in consequence of vibrations and repeated shocks.

repeated shocks.

There is no question that molecular changes take place in iron and steel under cretain conditions of service; neither is there any doubt that these changes are accompanied by deterioration of the material. This granted, it needs no argument to show how imperative it is that investigation should positively establish, first, the nature of the changes that can take place after the machanges that can take place after the ma-terial has entered the structure; and second, positively what the internal structure of the piece was at the time it was put into service. Until this point is settled and completely removed from the realm of supposition, it is simply idle speculation to talk of the effects of certain kinds of strains upon the internal

structure of the material.

The fact that thoroughly fibrous iron or steel was used in the manufacture of a conateel was used in the manufacture of a con-necting-rod, a piston-rod, a tie-rod or an eyebar, for instance, furnishes no founda-tion whatever for the supposition that the finished rod or bar was thoroughly fibrous at the time it was assembled into the engine or the bridge : nor, in case of failure, is the fact that the fractures of this rod have a crystal-line appearance any evidence whatever that the rod was originally not made of fibrous material, or that the strains to which it was subjected had changed its internal structure subjected had changed its internal structure from the fibrous to the crystalline; and last and least of all should the crystalline appearance of a fracture be accepted as proof of the presence of genuine crystallization in the material under consideration.

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In illustration of these statements I desire to call your attention to some cases in point which have come under my personal observation. As regards the fact that the use of good material is no criterion of the quality of the finished product, I recall the quality of the finished product, I recall the failure of the tie-rods in some cast-iron arch girders made at a prominent architectural iron works. This kind of girder is the most usual form of construction adopted for the support of the front walls over stores, or other large openings in city houses, and the wrought-iron straining rods used in them have usually upset heads welded on to the ends of the rod, which is used of the proper size just as it comes from the rolls. The size just as it comes from the rolls. The firm in question having occasion to test some such girders up to the point of rupture, were surprised to find that the tie-rods began to fail under a pull of a little less than 40,000 pounds per square inch of effective section, and that the fractures were short and decidedly crystalline. As the iron came from one of the best-known rolling mills in the

some tests of the broken rods and also of some of the iron as yet unused. The result of these tests showed that the iron sent by the rolling mill was of excellent quality BY ALBERT A. HILL, C. E.*

The constantly increasing use of iron and steel in the arts and in construction is largely due to that close study of the internal structure of the material toward which investigation has of late years been directed, and from which have resulted improved metallurgical processes, a more accurate knowlength of the physical proporties of the material recognition. crystalline

A longitudinal section through the rod

near the point of fracture treated with acid showed genuine crystallization, while another The test-tube, crucible and retort, the microscope and the testing machine, have all been pressed into service, and form the heavy ordnance which is slowly battering down the wall that separates speculation from knowledge. And yet, with all the improvements made in the production of iron and steel and in the manipulations of the metal in the blast furnace, the mill and the shop, we have barely reached the threshold of the knowledge which is requisite to a complete utilization of the material, which means minimum of metal combined with maximum of efficiency and of durability.

This question of durability opens a field of investigation, the final results of which will be decisive as to the degree of permanence to be looked for in structures of iron and steel.

Our present methods of dimensioning are based entirely upon such physical properties of the material as it possesses—or, rather, is supposed to posses—at the time it enters the structure. Of course, we distinguish between temporary structures, such as engines, machines and tools, and permanent structures, such as bridges, roofs and floors. For the former we dimension the several parts so as to be assured of a certain limited amount of service, expecting to replace after a certain length of time certain parts of the machine labels and retord the structures of the coating bright red. This result was quickly reached and be assured of a certain limited amount of service, expecting to replace after a certain length of time certain parts of the machine rather than to make the structure clumsy and unwieldy. In the latter, on the other hand, we endeavor to give the several parts such sectional areas as shall successfully resist an infinite number of repetitions of the normal strains and shocks which they are designed to resist. But in all cases our calculations are based upon more or less suppositious properties of the material—that is, if we use tough and fibrous iron or steel served. The man was instructed thereafter to arch his fire and pass the whole rod through it back and forth, until a uniform low red —in the dark—was reached. This gave the requisite elongation without any dangerous local heating, and ended, as I believe, all further complaints about the iron. Here, as in many similar cases, superficial investiga-tion would probably have resulted in contion would probably have resulted in con-demning the quality of the iron—in fact, judging only by the appearance of the frac-ture and mode of breaking, no other conclu-sion would have been possible. Or, if the girder should have failed after some years' service in the structure, and the good quality of the retorial used could have been estiof the material used could have been satisfactorily established, then the usual explanation of crystallization from vibration would have been offered, and the girder—instead of the blacksmith—been made a shining example of.

On the other hand, that the crystalline appearance of a fracture is not necessarily an indication of the presence of genuine crystals is proven by the well-known fact that a skillful blacksmith can fracture fine what, if any, allowances in dimensioning will prevent these changes. In order to form a correct estimate of the nature of the changes which the internal structure of a piece of iron or steel has undergone during service, it is evidently necessary to know positively what the internal structure of the hand, where there is genuine crystallization, no skill of manipulation will avail to hide positively what the internal structure of the that fact in the fracture. The most striking illustrations of this that have come ing illustrations of this that have come under my notice are the fractures of the beam-strap of the steamer Kaaterskill, and of the connecting rod of the chain-cable testing machine at the Washington Navy Yard. The photographs of both fractures are submitted to you, and the similarity of their appearance is most singular. Yet what a difference in the development of the longitudinal sections by acid treatment, which are also presented to you.

which are also presented to you.

In the Kaaterskill accident the fractures of both the upper and lower arms of the strap were found to be short and square. A straight-edge put alongside the remaining parts of the strap showed that no bending whatever had preceded the rupture, and careful measurements revealed the further Chicago Office: 111 DEARBORN ST. New York Office: 30 PINE ST.

Too much stress cannot be laid upon this last fact that crystalline appearance of a last fact that crystalline appearance of and small crystals, and the generalized by acid treatment, shows the presence of but few and small crystals, and the generalized by acid the stress cannot be laid upon this last fact that crystalline appearance of a last fac character of the iron used in the strap.

In the connecting-rod of the chain-cable testing machine we find the crystalline appearance of the fracture, if anything, less than that of the beam-strap—while the development of the longitudinal section by acid treatment reveals, in this case, most beautifully the thoroughly crystalline character of the metal. As is well known, this acter of the metal. As is well known, this rod, after many years of service, finally broke under a comparatively light strain, and having all along been supposed to have been carefully made, and from well-selected scrap, its intensely crystalline structure, as revealed by the fractures, has done service for quite a number of years as piece deresistance in all the "cold-crystallization" arguments which have been served up in that time. A few words in regard to the true that time. A few words in regard to the true causes of the crystallization of that rod may therefore not be amiss right here.

therefore not be amiss right here.

Having, through the courtesy of Professor Thurston, been permitted to experiment with the pieces of broken rod which you see here, the first thing I did was to develop the longitudinal section by cutting the rod in that direction and treating it with acid.

The purpose of this was to obtain primarily a classification of the crystals, and from the paragraph of the crystal is under of the con-BRIDGEWATERIRON CO., Bridgewater, Mass.

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Country, was warranted to test up to 50,000 pounds per square inch, and as a great deal of this same iron was used by the firm in roof and other truss construction, the unexpected failures of the straining-rods naturally created some uneasiness and distrust of the naked eye. This treated section farmishes incontrovertible evidence that the rod, aside from the fact of being badly diagnostic to the straining rods naturally created some uneasiness and distrust of the naked eye. This treated section farmishes incontrovertible evidence that the rod, aside from the fact of being badly diagnostic to the straining rods naturally created some uneasiness and distrust of the naked eye. This treated section farmishes incontrovertible evidence that the rod, aside from the fact of being badly diagnostic to the straining rods naturally created some uneasiness and distrust of the naked eye. This treated section farmishes incontrovertible evidence that the rod, aside from the fact of being badly diagnostic to the straining rods naturally created some uneasiness and distrust of the proposition of the crystals of the straining rods naturally created some uneasiness and distrust of the naked eye. This treated section farmishes incontrovertible evidence that the rod, aside from the fact of being badly distrust of the straining rods naturally created some uneasiness and distrust of the curystals of the straining rods naturally created some uneasiness and distrust of the capsulation of the crystals of the constitution of the crys

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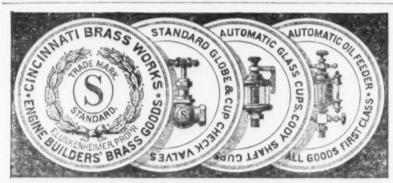
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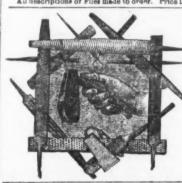
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tions to the contrary notwithstanding. If there is anything remarkable about this connecting-rod at all, it is not the fact that it broke, but that it did not break much sooner. Leaving out of consideration entirely the dimensions of the rod and the service it performed, and dropping all discovering in the finite procession, as to whether it was properly decreased. fore, from the large amount of this substance shown in the sections of the rod, that the pile was not formed, as stated, from "best selected scrap," but, on the contrary, of rather poorly selected scrap, with steel scrap mixed i.a, is by no means a forced one.

The evidences of bad heating are also abundant throughout both the faces of the fracture and the section treated with acid. The peculiar granulation always observable in material exposed either to a sudden, sharp flame or long-continued heat are traceable in almost every part of the broken piece under consideration. With material thus over-heated, the effects of bad hammer-work are shown by the losseness of the fiber and the peculiar crystallization which characterizes contraction cavities thus formed.

contraction cavities thus formed.

When either iron or steel—especially steel—which is overheated is put under the hammer, cavities commonly called "shakes" are formed. The walls of such cavities are sually found to be lined with large, well-defined crystals. In large forgings these crystals attain sometimes to ½ inch diameter in size, and between them are interspersed smaller ones. These crystals project occasmaller ones. These crystals project occasionally as much as half their length into the cavity, the walls of which latter have a clear, moxidized appearance, with a silvery luster. When rupture ensues in the direction of their axes, the prolongations of the large crystals are not always traceable in the section by the method of acid treatment mentioned, but the general appearance of the resulting granulation in iron, as shown you here enlarged 150 times, is invariably met with. These are particularly noticeable near the outer edges of the section, or, in other words, near the surface of the rod. Their origin is traceable mainly to the fact that the overheated pile or slab probably showed indications of going to pieces under the first blows of the hammer, and that the heated mass was therefore quickly turned, and by rapid and light blows put into its final shape.

But the strongest evidence against the

presumption that these crystals were formed during the service of the rod, or while the metal was cold, is found in the various metal was cold, is found in the various groupings of the crystals during their formation, as shown in the tracery developed by the acid. They are not of the same chemical composition, the lighter parts containing much more carbon than the darker ones; it is therefore pretty evident that with the grouping of the crystals a segregation of like chemical compounds took place, and this, of course, would have been impossible in the

olid state.

What, then, are the conditions under which erystallization in iron or steel can take place ? Thus far no one has yet adduced a single fact tending to show that there is a suspension of the general laws of crystallization in favor of iron or steel. The primary condition for crystallization to take place is freedom of molecular motion, and, therefore, as far as is known, crystallization takes place only

from solution, fusion and sublimation. The fact is that there is at present not a single well-authenticated instance of iron or steel ever having become crystallized from use under temperatures below 900° F. There is no doubt that both wrought iron or steel is no doubt that both wrought iron or steel broken by shocks, or subject to shocks and vibrations before breaking, will show a fracture of crystalline appearance, but this is due entirely to the fact that these kinds of stresses do not permit the gradual bringing under stress of all the fibers, therefore seriously injure the continuity of the metal, and hence impart to the fracture the peculiar appearance which is called crystalline. Where genuine crystals are found in the fractures, these have been there before the iron or steel left the mill or the blacksmith's shop. In this respect the experiments of Chernoff, of the St. Petersburg Steel Works, are almost conclusive, and a short summarization of them in this place will be apropos. zation of them in this place will be apropos.

Let the line oabc represent an imaginary thermometric scale, of which o represents

the metal at any of the ordinary atmospheric temperatures; the point a that of dark cherry-red; b red, but not sparkling; and c the melting point.

The points a, b and c have no permanent place on the scale, but vary with the quality of the material goes, nothing to wish for. The noticeable distortion of the wish for. The noticeable distortion of the steel; the harder the steel the nearer these points move to o, and the softer the steel the further off, and, speaking generally, with varying rates. The limits of these movements are so narrow that only an experienced eye can note them; and it should be added here that the colors named have referting to the material goes, nothing to wish for. The noticeable distortion of the only by the best practice will it be found possible to produce work showing such continuity of fiber as is found in this specimen. Average hammer work shows usually far greater distortion and considerable less continuity of fiber. added here that the colors named have reference to medium and hard steels particularly, for in very soft steels the points a and b recede very far, until in wrought iron the point b corresponds to white heat. The definition of these points Chernoff gives as folinition of these points Chernoff gives as folinition of the crystals are large and well developed. SEND FOR DESCRIPTIVE CIRCULAR TO

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Point b, the substance of steel passes quickly from the granular (or, speaking generally, crystalline) condition to the amorphous, wax-like structure, which it retains up to its melting point—that is, to the point c. In this condition the metal possesses the property of incompressibility, and at the same time has an analogy with respect to the permanence of amorphism to an exceedingly concentrated solution of a strongly crystalline, through carelessnoss or lack of skill or judgment on the part of a hammer-man. Encountered solution of a strongly crystalline salt.

To make this clearer, imagine a piece of orders.

Summing up what has thus far been said earsfully hoated, On attaining a certain on the subject, we find that the crystalline appearance of the first half of the bar from the granular (or, speaking generally, cult to make it much worse by using the like structure, which it retains up to its melting point—that is, to the point c. In this condition the metal possesses the property of incompressibility, and at the same time has an analogy with respect to the permanence of amorphism to an exceedingly concentrated solution of a strongly crystalline and the same time has an analogy with respect to the permanence of amorphism to an exceedingly concentrated solution of a strongly crystalline.

To make the substance of steel passes quickly from the granular (or, speaking generally, cult to make it much worse by using the like structure, which it retains up to it melting point—that is, to the point c. In this condition the mean property of incompressibility, and at the same time has an analogy with respect to the permanence of amorphism to an exceedingly concentrated solution of a strongly crystalline and the same time to a strongly crystalline and the same time to a strongly crystalline and the same time t

service it performed, and dropping all discussion as to whether it was properly designed or not, let us see what sort of story the crystals tell in regard to the quality of the iron. For this purpose it is only necessary to point, by way of proof, to the presence in large quantities of the class of crystals which are shown you here magnified a substance, presumably a ferro-carbide, which is not soluble in nitric acid, and is found in steel only. The deduction, therefore, from the large amount of this substance when heated above b. The hicher the steel when heated above b. The higher the steel is heated the softer it becomes, and the slower the temperature is allowed to fall to the point b without disturbance of the mass, the greater liberty will the particles have to group themselves into crystals, &c. At temperatures lower than b, as has already been stated, the structure is not changed. Hence we have the following conditions of struc-

we have the following conditions of tural changes dependent upon heat:

o to a, steel will not harden.
o to b, no change of structure.
b to c, rising, amorphous structure o to b, failing, crystallization.

What is said here of steel holds measurably good for iron, with the proper consider-ation of the variations due to the influence of heat under varying carbon percentages. It is therefore evident that, in order to in-crease the density of iron or steel—that is, to bring about a more energetic cohesion of

the particles—this must be done at a temperature below b, where we are not opposed by the force of heat.

If a cast ingot of any given structure is heated not higher than the point b, then in its heated state it will retain its structure. its heated state it will retain its structure. If it was crystallize, then in a heated state it would be composed of the same crystals, which, however, would be considerably softened. If a piece of steel be forged in this condition, then its crystals or grains, being driven against each other, will change their shape, becoming elongated in one direction and contracted in another, and the increase in den its becomes so considerable that the in density becomes so considerable that the specific gravity is increased, which is never the case in steels forged at a temperature higher than b.

We must therefore conclude that all crystalization is due to effects of temperature, and working at temperatures far above those which the material can ever attain in

use as part of a structure.

To show the facility with which crystallization takes place at high temperatures, and the peculiar dangers with which large and the peculiar dangers with which large forgings and hammer-work in general are beset, I ask your permission to recite the results of an experiment made lately by myself for the purpose of this demonstration: A slab hammered out of best selected scrap, such as is used for the manufacture of connecting-rods, was taken at random from a lot in stock. The slab, weighing about 200 pounds, was drawn out under the hammer into a 3 x 3 inch square bar under the following circumstances: For the first heat the whole slab was put in the furnace, carefully heated, and then one-half of it only worked under the hammer. At the second heating only the worked part went into the furnace, and, when properly the second heating only the worked part went into the furnace, and, when properly reheated, was worked out still further; the 3 x 3 inch bar being finished on the third heat for one-half its length. The forging was then turned end for end, the unworked portion of it put into the furnace and exposed to a sharp flame, bringing it quickly to a running heat, and then keeping it for a while length exposed to this high it for a while longer exposed to this high temperature. The result was that it showed signs of going to pieces under the first blows of the harmor. Moreover, the piece being exceedingly soft, the reduction under full-force harmer-blows would have been too great. It was therefore only hammered very lightly, then reheated in the same injudicious manner as before, and finished on the second heat. After the bar was cooled it would have been impossible to detect any difference in the appearance of the two halves into which the forging was next divided. The next step taken was to slot a piece out of the center of each of these halves for their whole learth giving a test piece 1/2 in the first part of the center of each of these halves for their whole length, giving a test piece ½ inch thick, 3 inches wide and about 3 feet long. Each one of these pieces was then further cut in two, one half to be broken in the testing machine under tensile strain, the other half to be ground and polished for treatment with acid. For the sake of comparison similar test pieces were cut from a rolled bar. The acid development of these sections is here before you. Comparing the two pieces of hammered iron, it would seem almost incredible that they were made not only from the ible that they were made not only from the same scrap pile, but were parts of the same bar. The one is a fair representative of

nition of these points Chernoff gives as follows: No matter how quickly cooled, steel the crystals are large and well developed. It is abundance of crystals found in contraction cavities and which were shown you be fore enlarged 150 times (some of them in this definition of b is that steel heated to a lower temperature than b will not change its structure, whether cooled slowly or quickly. As soon as the temperature has reached the point b, the substance of steel passes quickly the appearance of the first half of the bar from the granular (or speaking generally.

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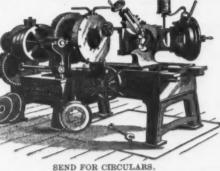
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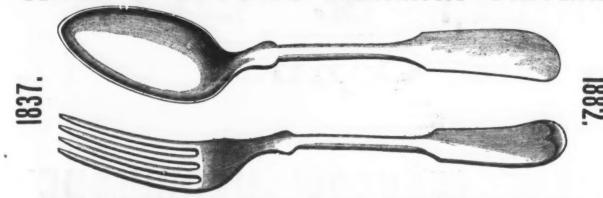
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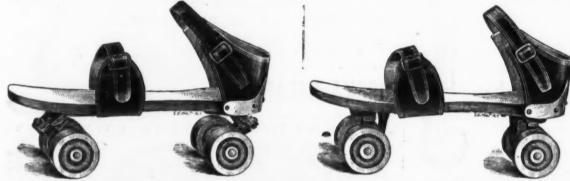
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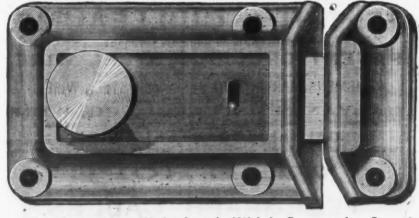
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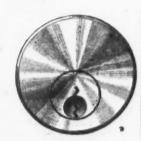
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to genuine crystallization having taken place in consequence of insufficient or defective working in the finishing processes, or it may be due to that peculiar mode of rupture which is brought about by vibratory strains or severe shocks. No method of dimensioning will ever be found adequate to compensate rationally for defective workmanship. True, the factor of safety is supposed to include the compensation for defective workmanship, but practice teaches us that it does not. The fact is, all hammered iron or steel is more or less crystaldimensioning will ever be found adequate to compensate rationally for defective workmanship. True, the factor of safety is supposed to include the compensation for defective workmanship, but practice teaches us that it does not. The fact is, all hammered iron or steel is more or less crystallization depending altogether upon the greater or lesser skill employed in working the metal, and also largely upon the size of the forging. Crystallization tends to lower very sensibly the elastic limit of iron and steel, and therefore hastens the deterioration of the material under strain. It is for this reason that large and heavy forgings ought to be, and measureably are, excluded as much as possible from permanent structures. In machine construction we cannot do without them, and must therefore accept the out them, and must therefore accept the necessity of replacing more or less frequently the parts doing the heaviest work. Whether we shall ultimately succeed in formulating precisely the effects of vibratory strains is a question which only time and careful and

extended experiments can solve.

That our present methods of dimensioning and our conventional safety coefficients are lamentably defective every intelligent engineer knows, and chafes under the restraint they impose upon his designs, especially in competitive work. Yet so long as we adhere to the absurdity of basing the facwe adhere to the absurdity of basing the factor of safety upon an erroneous and meaningless ultimate strength, we must be prepared to meet with "unaccountable" failures. It is the proud claim of modern science that in the solution of engineering problems the use of the word "impossible" has become obsolete. This claim will be considerably strengthened when scientific research once succeeds in dissipating the mists of superstitious tradition which envelop mists of superstitious tradition which envelop at present the records of so-called "unac-countable" failures, and among which cold crystalization plays such a prominent part.

LATEST LEGAL DECISIONS.

PARTNER'S INDIVIDUAL INDEBTEDNESS NOT

PAYABLE OUT OF FIRM'S ASSETS. R had his note for \$1200 discounted, and R had his note for \$1200 discounted, and paid \$780 into his firm as a portion of his contribution to the capital. When the note fell due it was renewed, and afterward R gave a judgment note of his firm for the amount. A cred tor of the firm attacked the judgment as not binding on the firm, and therefore fraudulent as to creditors. In this case—McNaughton's appeal—the Supreme Court of Pennsylvania decided in favor of the creditors. Judge Sterrett, in the opinion. the creditors. Judge Sterrett, in the opinion, said: "I. One of the general incidents of said: "I. One of the general incidents of a partnership is the right of each partner to apply the firm assets to the payment of its liability, and, following out that principle, it has been held that one of several partners may justly subject the joint property to levy and sale in discharge of parnership indebtedness by giving a judgment note therefor in the name of the firm. But it is a very different thing in a legal as well as moral point of view for a partner to thus undertake to pay his individual debt without the knowledge of his partner. 2. This judgment between R and his creditor was collusive, and not binding on the partnership. Whenever such a judgment or the execution issued theron thus comes into conflict with said: whenever such a judgment of the execution issued theron thus comes into conflict with the claims of creditors, they may avoid its effect by showing that as to them it is a nullity."

PURCHASER OF PROPERTY ASSUMING MORTGAGE DEBT.

PURCHASER OF PROPERTY ASSUMING
MORTOAGE DEFT.

W bought a half-interest in a house on which there was a mortgage, and the amount of the mortgage debt was allowed in the price, and he agreed in the transaction to be jointly liable with the vender for the mortgage debt. The mortgages used W for the debt and was defeated. He appealed the case to the Supreme Court of Appeals of Virginia, which reversed the decree. Judge Staples, in the opinion, said: "After much discussion, and notwithstanding some diversity of judicial opinion, the rule seems to be now settled that a grantee of mortgage premises, who has purchased subject to a mortgage debt as a part of the consideration, is personally liable to the mortgage, in a suit to forcelose the mortgage. The amount allowed to the grantee out of the purchase money, by reason of his assumption of the mortgage, is a fund in the hands of the grantee applicable to the payment of the mortgage, is a fund in the hands of the grantee applicable to the payment of the mortgage, is a fund in the hands of the grantee applicable to the payment of the mortgage, is a fund in the hands of the granter is the surety; and the creditor or mortgage, being entitled on equitable principles to the bonefit of all collateral security held by his debtor, may resort, by way of equitable subrogation, to the covenant of the purchaser or grantee with the mortgageon."

INTEREST ON INTEREST—CONSIDERATION—FORBEARANCE.

On June 1, 1866, W borrowed from E \$1240 at 10 per cent. interest, payable yearly. The first payment made on this dobt, or the interest on it, was on March 10, 1876. During the year of 1876 W paid E \$3500, and relieved thomselves do and refused to pay more. E then sued him for the balance he claimed, which was computed by charging interest at the same rate of 10 per cent. on the installments of interest as they fell due. In this case—Edgerton vs.

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evidence was that the defendant asked the plaintiff to wait, and that he did wait—nothing more. This does not show that the plaintiff accepted the request of the defendant; he might have enforced his demand at any time, and the defendant have had no relief; no contract for forbearance could be shown by him. Therefore, he was not bound, the plaintiff not being bound."

PEDDLING PATENTED ARTICLE-LICENSE.

A city ordinance required peddlers to take out a license of \$15 a year, or they would be compelled to pay \$3 a day. R was selling a patented clothes-wringer and when he was arrested he set up as a defense that as the letters patent authorized the manufacturers to make, use and vend the patented article, no State or portion thereof could restrict the sale. State or portion thereof could restrict the sale. He was convicted and fined, and appealed the case—The People vs. Russell—to the Supreme Court of Michigan, which affirmed the judgment. Judge Cooley, in the opinion, said: "The power of Congress to grant the exclusive right to make and sell the articles, which from their originality and value have been found deserving, is exclusive, and any State legislation which undertakes to limis or restrict in any manner the privilege which the letters patent confer is an invasion of the sphere of national authority, and therefore void. But this ordinasce does not assume to interfere with or in any way to abridge the exclusive rights of the patentee. sume to interfere with or in any way to abridge the exclusive rights of the patentee. The ordinance is a police regulation, made under the general police authority, of the State, taking no notice of this or of any other patent, or of the way in which any saleable commodity may have come into existence. It is one of the customary regulations for a business. It is well settled now, if it was ever doubted, that any ordinary if it was ever doubted, that any ordinary exercise of Congressional authority does not take away from the State any portion of its general power of police."

Piracy of Metal Brands.

A recent issue of the Ironmonger furnishes particulars of a series of alleged frauds in Swedish iron, said to have been committed in London a few weeks since and incidentally referred to by our London correspondent in a recent communication. The matter naturally excited considerable interest in metal circles. According to the account given by our contemporary above centioned, it appears that some months ago a certain it appears that some months ago a certain firm of London merchants who are in the habit of shipping to the East received an offer from a local firm of metal brokers to supply Swedish hammered bars at a price something below the market value of that class of iron at the time considered. After preliminary negotiations it was decided to purchase, the understanding on the part of the buyers being that the iron to be supplied was really Swedish—that is to say, manufactured in Sweden in the usual manner. No question was raised as to the genuine character of the iron, simply because there was then no suspicion of fraud or duplicity. A number of contract notes were received by the purchasing firm for various quantities of the purchasing firm for various quantities of iron, in none of which, however, was there any mention of "imitation Swedish," or, in any mention of "imitation Swedish," or, in fact, anything to show the buyers that they were being supplied with iron which was not what it professed to be. An invoice received by them some time later was the means of bringing to light the whole matter. The invoice contained the words "bars cut slant," which aroused the suspicions of a gentleman in the employment of the firm, knowing, as he did, that in real Swedish hammered bars that would follow as a matter of course, and therefore need not be distinctly mentioned. In order to allay these

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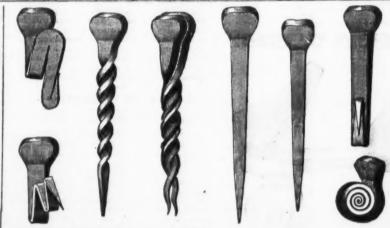


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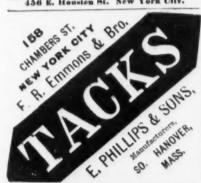
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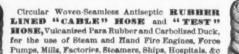
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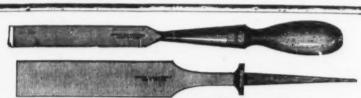


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deal; in any case it is a delicate issue, and one not to be lightly dogmatized about on other than very thorough evidence. On a subsidiary question more may be said—namely, as to the brand marked on these "Swedish bars." That brand could not be found in the Swedish "Stampel-bok," but it was very readily recognized as being the property of an old-established and respectable Lancashire concern. By the owners it is used on their "imitation Swedish," and is well known here as well as in certain foreign markets. Its use, under the circumstances recited, must be deemed extremely strange, and has of necessity already been the subject of correspondence between the parties. An apology has been offered, we believe, with the explanation that it was made use of inadvertently. Somewhat singularly, a mis-use of that identical mark occurred some years ago at the same works, but by a different proprietary, on which occasion the wrongful users paid a somewhat considerable sum for their appropriation of what was not their own property. What may be the result in the present instance remains to be seen. The whole affair, indeed, is extremely complicated, but it is a startling revelation, to put it mildly, to find that these extraordiary practices should be in vogue among us. But for the acumen of one man in detecting the no doubt accidental slip of a clerk's pen the affair might have attained much more formidable proportions, and irretrievable damage might have been done to the reputation of honorable English houses

In a subsequent issue of the Ironmonger of find the following relating to the same subject: "In the course of our remarks last week as to a brand having been struck on the so-called Swedish bars sold for real hamthe so-called Swedish bars sold for real ham-mered Swedish iron, we mentioned that such brand belonged to a Lancashire con-cern, and that it was used by its legitimate owners on imitation Swedish bars. It has been pointed out to us that foreign buyers and consumers' may infer from that state-ment that all iron bearing 'Lancashire' brands is not genuine. It is possible that such an inference may be drawn, although we deem it quite improbable. We may as well point out, nevertheless, that there are such an inference may be drawn, although we deem it quite improbable. We may as well point out, nevertheless, that there are many brands of iron made in Sweden which bear the word 'Lancashire,' or some abbreviation or variation thereof, and with or without distinguishing letters, marks or signs. Some of these are simply branded 'Lancash,' others 'Lancashire' in full; others again, 'Lancashire Swedish' or Swedish Lancashire.' Yet others are branded 'Lancash: Swedish,' 'Lancashire Sweden,' 'L-shire' (with marks), 'Lancashire Sweden,' 'Lancashire Gaswelded,' 'Lancashire Rolled,' 'L shire Gaswd.' All these brands cover genuine Swedish iron, so that to reject iron simply because it is marked in any of the foregoing because it is marked in any of the foregoing methods would be quite unjustifiable, and could only be done by those ignorant of the usages of the Swedish iron trade. At the same time, there can be little doubt that the practice of mixing up, as it were, Lancashire with Sweden is one which leads to a good deal of confusion, and renders fraud more probable and plausible. The difference between 'Swedish Lancashire' and 'Lancashire Swedish' made in Sweden, and iron similarly branded made in shire' and 'Lancashire Swedish' made in Sweden, and iron similarly branded made in Lancashire or Yorkshire, may be perfectly plain to the merchant or buyer here, but the distinction is by no means so readily understood by the buyer abroad, say in Bombay, Madras or Calcutta. If possible, it would be advisable to emphasize the difference most distinctly in every instance, so that there distinctly in every instance, so that there may be no room for double-dealing or disputes. The system, as it stands, is probably much too intricate and widespread to be easily altered, but we fancy that shippers and buyers may readily protect themselves and the ultimate consumers by insisting on a sworn certificate of origin from the makers in every instance. Had that been done there would have been no room or reason for our article of last week. Since the appearance of that article we have had other complaints which seem to show that the matter is even more serious than had been supposed. A Birmingham reader of this journal appears to have been a sufferer, and one of the Shefield newspapers states that there are also believed to be victims in that town. Whether one firm has suffered or 20 firms, however, does not in any way alter the principles in-volved, and we can only repeat our desire

Utah Locomotives.—The Salt Lake Tri-bune says: "A visit to the Utah Central Railroad shops in this city is enough to convince any one that the company are pretty well prepared to do all needed work in the line of repairs, and building of new cars, machinery, &c., even up to that of locomotives. The shops are well provided with good tools, part of which were built in the good tools, part of which were built in the hops. The master mechanic has under his supervision about 200 men, most of whom do work in the shops and around the yard. The monthly pay-roll aggregates over \$11,000. When a Tribune reporter visited the shops on Saturday, he found the mechanics busy in all the various departments. In the roundhouse, which has 12 stalls, a number of engines were being overhauled and put in good condition for service on the road. Some of these had been dismantled, the parts being piled on the floor, while the boiler remained, supported on timbers, the boiler-makers being engaged in putting on new plates and doing other work. One new boiler is in course of construction, to form part of a new locometive which is being built in the shop. This engine is to be built for speed, and will have driving wheels 5 feet to inches in diameter, which is much larger than any wheels in use on roads in boiler is in course of construction, to form part of a new locometive which is being built in the shop. This engine is to be built for speed, and will have driving wheels feet to inches in diameter, which is much larger than any wheels in use on roads in the West. These wheels are cast from pig iron made at the Ogden Iron Works, and hence are strictly a Utah production. The framework of this engine was forged in these shops, and when the locomotive is completed it will represent Utah labor and skill, and partly Utah material. It will require some months yet to complete it."

It appears that there are no fewer than 15,024 saw mills in the United States, and 637 in Quebec, Ontario and Manitoba. The figures of the work performed by these mills are almost bewildering, and during last year nearly 750,000,000 feet more timber was manufactured than in the year 1881. Toward the close of the year new mills were being built in every direction so as to be ready for work this spring; all of which promises to keep insurance companies as busy as ever paying losses on this class of special risks.

The Gem Cherry-Stoner.

The new "Gem" cherry-stoner, manufac-tured by the Enterprise Mfg. Co. of Pennsylvania, Philadelphia, is shown in the accompanying engraving. The special features to which the makers direct attention are simplicity of parts, and the fact that by the use of this device fine fruit is not crushed in the process of stoning. In using this cherryatoner the fruit is poured into the panlike receptacle shown at the left, from which it feeds naturally, one piece at a time, under the revolving knife shown at the top and near the center of the engraving. This knife, in its course, passes through the fruit, cutting it so as to release the stone, forcing the left. it so as to release the stone, forcing the lat-ter through the pliable material of which the parts immediately under the knife are made, and, by means of the spout, throws it to one side. The fruit left above takes another course, falling into the dish set to receive it. The manufacturers claim for this machin that it leaves the fruit in much more perfect



The Gem Cherry Stoner.

form than other devices in use, making cherries stoned by it much more desirable for table use and preserving.

Electrical Exhibitions.

The Secretary of the Treasury has announced the rules under which articles for the Electrical Exhibition of the Franklin Institute may be entered in bond, the duties being paid only upon those that may be sold. The Vienna Exhibition of part surprises a expected to be harded. next autumn is expected to be a kind of feeder of the Philadelphia show, as arrangements can easily be made to have many of the exhibits sent here immediately after the close of the Austrian display. The latter is evidently to be very comprehensive and in-teresting, and the managers are trying to give it scientific value by arranging for tests that are so much needed in all the newer forms of electrical invention. One French company have already secured space in the company have already secured space in the Vienna Exhibition for showing eight different dynamo-electric machines, three electromotors, lamps of many different systems, microphones, telephones, secondary batteries, new systems of telegraphy and a regulator for light-houses. All of the different light companies are also preparing special exhibits, and among the dynamo-electric machines promised is one monster that is capable of furnishing a current to 100 are lights. The Edison installment is to light 500 incandescent lamps.

incandescent lamps.

Perhaps the most interesting articles to electricians for which space has been granted are the instruments used for testing and making measurements, of which very delicate and exact apparatus a large display is required. Secondary or store a betteric promised. Secondary or storage batteries will also be exhibited in great variety, and tests will no doubt be made to determine their relative efficiency. Among the curiosi-ties will be an arc light of 20,000 candle power for light-house uses. Electric motors will occupy a prominent place, and practical use of them will be made during the exhibition. Of more immediate practical interest will be a grand display of electric railway signals for use on steam and other roads, to regulate the safe running of trains. Another CROSS-HEAD GIBBS, STEPS, BUSHINGS,
And all purposes where Maximum Durability, Anti-Frictional and Non-Cutting Qualities are Desirable.

Isked in accordance with their deserts."

Judging from past experience in matters of this kind, there seems to be every prospect of prompt and decisive action, and it is to be hoped that the infliction of a just punishment in this instance will provent the speedy recurrence of similar proceedings.

Tegulate the safe running of trains. Another branch of electrical application that will prove curious will be the instruments designed for use in surgery, as well as the hoped that the infliction of a just punishment in this instance will provent the speedy recurrence of similar proceedings.

and other engines driven by electricity and used for medical purposes.

The telegraph and telephone, though already carried to a high degree of perfection, present many opportunities for novel exhibits, and the latest inventions in these departments of electrical work are to be shown. Practical application will also be made of the suggestion advanced long ago—the utilization of waterfalls to generate electricity. In the preliminary announcements thus far published nothing is said about any underground systems of carrying conductors, but these will no doubt be exhibited, or, if not, the Franklin Institute will be given a good opportunity to make up for an important omission. The catalogue already issued, however, shows what an interesting and important display can be made of electrical apparatus alone, and the Franklin Institute, by enlisting the help of American inventors, can certainly make a display that will equal, if not surpass, that of Vienna, which now gives such fair promise of success.

The Iron Age

Metallurgical Review.

New York, Thursday, April 19, 1883.

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Condition of the Blast Furnaces of fusal to state what the action of the conferthe United States, April 1, 1883.

Our regular quarterly report of the condition of the blast furnaces of the country will be found on the next page. In view of the condition of the blast-furnace industry and the doubt and uncertainty that have hung over its future, largely by reason of the price of ore, this report is especially interesting. In order to avoid any misunderstanding and to point out exactly the scope of the table,

the following explanations are given: I. The divisions of the localities are geographical for the most part, and are not made with reference to the points from which furnace supplies are drawn. 2. The columns "in blast" and "out of blast" only show the stacks from which we have reports and their footings will not in every case equal the footings of the column of total number. 3. We have included some furnaces that are rebuilding and not yet completed, and others that are building, and in one or two cases some furnaces that have been reported abandoned, since their owners do not report them. In this connection, however, we have availed ourselves of the new edition of Mr. James M. Swank's valuable "Directory to the Iron Works of the United States," think that our lists now contain very few furnaces that are not likely ever to go again in blast. For this reason also there will be more or less discrepancy between this and our report of last January. 4. The column of capacity per week is somewhat in excess of what the regular working of the furnace will show-stoppages, slow working and various other causes, which will readily occur to those interested, combining to reduce the make below the furnace capacity.

In a condensed form the table shows the following (I, in blast; II, out of blast):

CONDITION	OF	***	MANACES	wanter at root	
				I.	II.
Charcoal				98	153
Anthracite					78
Bituminous				121	103
				named to the same of the same	(Mag) 4 (M)
Total			*****	375	334
A		SAR.	T	Ah-	

As compared with January 1 of the present year, this is a very decided reduction, the condition at that time being as follows: CONDITION OF BLAST FURNACES JAN. 1, 1883.

	I.	II.
Charcoal	124	228
Anthracite	160	64
Bituminous	138	88
Total	430	28o .
From this it will be seen th	at the	decrease

in the number of charcoal furnaces in blast since January I is 25, the decrease in the number of anthracite furnaces is 13, and of bituminous furnaces 17. The great change in the number of charcosl furnaces out of blast is due no doubt to the large stocks on hand by reason of the large overproduction in iron of this kind-a production that has led to very serious consideration of the advisability of blowing out a large number of these furnaces for several months, in order to bring about such relations between supply and demand as will enable the charcoal furnacemen to get a reasonable price for their product. The smallest change has been in the anthracite furnaces, the number that have gone out of blast since the last report being less in this branch of the pigiron industry than in any other, while the number of furnaces in blast is greater, both absolutely and relatively, than in either charcoal or bituminous. As compared with a year ago, the change is still more marked than compared with three months ago. year ago 132 charcoal furnaces were in blast against 98 now, 175 anthracite against 156, and 150 bituminous against 121.

The relative condition of the blast furnaces of the country on the 1st of April for six years is as follows :

NUMBER OF FURNACES IN BLAST, APRIL I. 1877. 1878. 1879. 1880. 1881. 1882. 1883. Total.....218 252 241 431 453 457 NUMBER OF FURNACES OUT OF BLAST, APRIL 1. 1877. 1878. 1879. 1880. 1881. 1882. 1881. Charcoal.....220 207 191 154 132 246 153 Anthracite...142 129 137 40 80 01 78 Bituminous...126 122 133 60 64 74 103 153 Total....488 458 463 260 276 281 334

Labor Situation West.

The committees representing the Iron Mines by the Breaking of Winding Ropes. The the Amalgamated Association of Iron and Wales, however, showed a marked decline, the Amalgamated Association of Iron and Wales, however, showed a marked decline, Society of Mechanical Engineers.

day afternoon last to present their views to works there ceased to manufacture wrought each other regarding the scale of wages for iron in 1881, having taken up the manufac-Iron and Metal Markets. Financial. General Hard- the year ending June 1, 1883. As to what ture of steel instead. Owing to this move-what they did, what the probabilities are, twelve Welsh works are now engaged in Therentweshird Page. — Philadelphia. Pittsurgh. Chicago. Chattanooga. Cincinnati. St.
ouis. I ouisvile. Richmond. Baltimore. San
They have delegated the secretaries of the
years ago. The total number of active pudrancisco. Our English Letter. to make all statements that are to be given end of 1882 was 4369, being 814 less than in War Vessels.

The Forbes Patent Die-Stock. Industrial Items.

Was vessels.

Will say is that the meeting was held, both sides presented their views, and without should be remembered, however, that the coming to any definite conclusion. certainly indicates that a conclusion will be on December 31 cannot, therefore, be safely Thirty-fourth Page. New York Wholesale reached without serious trouble. It shows a adopted as a fair average. In some cases, Forty-first Page.—Philadelphia and Pittsburgh certainly indicates that they are fully com-

ence was, it seems evident, from hints able. that are dropped, that the manufacturers proposed a reduction of the scale, which the workingmen refused to accept, the employees demanding the continuation of the present scale, with some slight modifications. It is stated that a scale fixing a rate of wages to be paid engineers in the mills, which has been agitated and discussed for something like 18 months, was proposed, and some additions were made to the puddling and finishing scales by the men—not changing them as to prices and terms, but simply recognizing in the scale certain rates that are paid for certain classes of work which have not heretofore been included in the yearly scale agreement. It is, of course, too early to form even an idea of what the result will be, even if we had the information as to what took place at this meeting. While the Pitts-burgh manufacturers and those of the West will not state what their demands were, they do freely say that they must have a reduction in wages : that there is no reason why from \$1.50 to \$2 a ton more for puddling should be paid in the West than in of the total number (6296), 4369 were in the East. They also can see no reason why, if the Amalgamated Association have conceded a reduction of 33½ per cent. to 69.39. the Bessemer steel mills of the West, whose So product comes into competition so largely with their own, they also should not have a orresponding reduction. The men ought to be wise enough to see that the claim of est: the manufacturers is a just one. We do not believe that they will be so unwise as to permit a lockout, and see work that should be theirs go East to workmen who will not assist them in keeping up prices, but who will accept reductions and at the same time appeal frantically to the Western men not to accept them, because if they do it will make still another reduction East. In a word, from the tone of the Pittsburgh papers, we are convinced that both manufacturers and workingmen will refuse to give the East the nice plum that they had last year, and permit them to run day and night to supply the Western trade; but, at the same time, we are of the opinion that, unless a reduction is conceded, there will be a general lockout of the Western mills.

The Manufactured Iron Trade of Great Britain in 1882.

The detailed statements as to the manufactured iron trade of Great Britain in 1882, which have just come to hand, are interesting and suggestive in many respects. A prominent feature of the report is a number of tables giving the production of puddled bar in the principal districts of the Kingdom, the average annual production per puddling furnace, the output of different descriptions of manufactured iron, and numerous other particulars of equal interest and importance. Inspection shows that the total production of puddled bar during the year amounted to 2,841,534 tons, the Cleveland district heading the list with 852,199 tons. Comparing these figures with those of the preceding year, we find an increase of 160,384 and 183,010 tons respectively, the latter, however, being subject to the modification that the value for 1881 referred to manufactured iron only, while that for 1882 applies to pud-dled bar. As the quantity of the latter produced in 1882 was more than 100,000 tons in excess of the make of finished iron, a nearly corresponding increase of puddled bar may

be assumed for the former year.

The official returns of the production of manufactured iron in the North of England, issued by the Board of Arbitration, for the year 1882 are as follows:

Quar. ending	Rails.	Plates.	Bars.	Angles,	. Total.		
Mar. 31 June 30 Sept. 10 Dec. 31	tns. cwt. 2,648 16 979 9 917 14 1,663 14	tms. cwt. 105 293 3 98, 403 13 113, 214 13 1:6, 574 15	tns. owt. 18.410 12 14,429 17 74,336 0 15 393 0	tns. cwt. 35,186 2 31,845 17 31,396 19 31,208 8	tns. cwt. 161,478 13 115 498 16 159,855 6 164,239 17		
Totals.	5,609 13	433,216 4	62,569 9	1-9.647 6	631,012 12		

In compiling this table, however, the output of eleven firms was not included, and as these are estimated to have produced about 110,000 tons, the total manufacture of finished from is brought up to 741.043 tons. The actual production of puddled bar during 1882 in this portion of the Kingdom was 35 per cent. more than the production of the four leading varieties of manufactured iron Manufacturers' Association of the West and already specified. The production in South Steel Workers met in Pittsburgh on Satur- attributed to the fact that two of the large t day afternoon last to present their views to works there ceased to manufacture wrought occurred at this meeting both sides are unuent some 149 puddling furnaces were usually reticent. They have refused to thrown out of use. A third establishment what they did, what the probabilities are, twelve Welsh works are now engaged in two associations, Mr. Martin and Mr. Weeks, dling furnaces in the whole Kingdom at the to the public, and all that these gentlemen the preceding year, and the average annual coming to any definite conclusion an ad- number of furnaces in operation for the journment was had to a future undetermined whole year probably varied to a great extent

But while there seems to have been a re- it appears that the decline in the total num- encouraging outlook for the present year.

ber of puddling furnaces has been consider-Thus, in 1860 the total number was 3462; in 1864, 6338; in 1868, 5903; and in 1872, 7311. The latter was the greatest number returned in any one year. In 1874 the number had declined to 6803, and in 1877 it rose again to 7159. The total number of furnaces returned for 1882 (6296) was for less than that for the preceding vear. The number of furnaces in actual operation at the end of 1882 was, as already emarked, 814 less than that returned for the corresponding date in 1881, but of these a good many had probably been working over a certain part of the year. This is, indeed, made tolerably evident by the greater production of 1882. Assuming that 10 per cent, of the furnaces constructed are usually out of work for purposes of repair, &c .which is the calculation generally accepted by the trade-it would appear that of the remainder, 21 per cent. of the furnaces were inoperative on account of the condition of trade, and of that proportion probably two thirds will not again be lighted up. The statistics of furnaces for 1882 show that out

So far as the production of different descriptions of manufactured iron is concerned, the following table, compiled by the British Iron Trade Association, may prove of inter-

Descriptions.	tons.	production
hip plates	495.000	30.53
Angles	169,000	10.43
3ars	434,200	26.78
Rails	60,339	3.72
heets	EE4.200	7.04
loops	71,000	4.38
Vire rods	8x,000	4-99
loke bars (for tin pits.)	35,000	8.15
trips	42.000	2.62
ee iron	21,730	1.33
acking iron	3,500	.21
encing wire	10,800	.66
ail rods	18,600	X. 24
Boiler and other plates	64,000	3-94
Total	1,620,050	99.98

In this case, however, it may also be renarked that the figures cannot be implicitly relied upon, many firms dividing their returns simply into "puddled bars" and finished iron," without more definite particulars. On the whole, however, the returns the proportions of the different leading productions from puddled bar.

The production of ship plates was considerably larger in 1882 than in any former year, the increase in the North of England alone being 47,500 tons. It should be noted that this district produces more than threefourths of all the iron ship plates manufactured in the country, and it was calculated, on data supplied by a leading ship-builder on the Clyde, that in the shipbuilding trade of the United Kingdom 650,380 tons of plate, angles and bulbs would be employed of England would produce about 580,000 tons, of which, however, a certain proportion would be exported to foreign countries.

Iron-rail statistics show that in 1882 the fourteen, with a production of 60,339. The of some 13,807 tons must have been used for home purposes, and the greater proportion of this quantity is estimated to have taken the form of light rails for collieries. The Board of Arbitration returns for the production of manufactured iron in the North of England during the past eleven years are as follows :

Bars. Angles. Total. Rails. | Plates. Tons. Tons. 58,167 610,821 79,420 44,403 613,861 101,054 101,0 Tons.
177,847
155,592
178.272
173.416 999,074 324,440 205,020 246,218 107,832 36,750 21,645 6,768 27,414 15,904 5,609

Inspecting these figures, it will be noticed that there was a steady decrease in the tonnage from year to year, the minimum market, and the probable being reached in 1879, after which, however, the output rapidly rose from a total of somewhat less than 300,000 tons to more than double that quantity. The decrease referred to extended through almost every department, being most strongly marked in connection with rails.

The exports of finished iron for 1881 and

Description.	1981.	1882,	or dec. in 1882		
	Tons.	Tons.	Tons.		
Bar, angle, bolt and					
rod iron	204.757	313 645	18,81		
Wire	75.118	80,686	+ 38.5		
Hoops, sheets and					
plates	305.499	343.287	+ 37.7		
Tin plates	242,448	205,023	+ 22,5		
Other fron	891,934	329, 390	+ 37.4		
fron rails	119,686	46,538	- 73. I		
Other railroad iron.	106,506	152,672	+ 46,1		
Totals	1,436,008	1,537,842			
Net lucrease	101,234	*******			

Referring to the exports of wire, we would state that both iron and steel wire are date. This course of the two associations in every district, and the number working included, the two not being separated in the containly indicates that a conclusion will be on December 31 cannot, therefore, be safely Board of Trade returns. "Other railroad Board of Trade returns. iron" implies the remainder obtained after Thirty-fourth Page.—New York Wholesale determination on their part to discuss the also, large quantities of scrap were worked deducting iron and steel rails from railroad up, and the products of ball furnaces were iron of all sorts in the returns, and is likely rices (Continued).

Thirty-sixth Page.—New York Wholesale without calling in the aid of the public, and included with puddled bars, thus accounting, to include a certain undetermined proportion. the action of these two associations last year in a great measure, for the high averages of steel sleepers, &c. Altogether, it will be noted there was an increase in every in-Reviewing the figures for some years past, stance but one, the figures indicating an

The Census Statistics on Coke.

The report of the Special Agent on coke nanufacture seems to have greatly disturbed the equanimity of a journal published in the Connellsville region, and, as usual in attacks on the census, without stopping to investigate the facts of the case, it immediately charges the report with containing gross errors. The particular error in this case seems to be that the census agent reported the number of persons employed in the manufacture of coke in Pennsylvania at the close of the census year as 2444, whereas the paper in question claims that there were engaged in the coke industry in the Connellsville region alone over 6000 people, arriving at his estimate of 6000 by assuming that there were 6000 coke ovens in this region at that time, and that one man to an oven was employed. This number of 6000 is found by including with those engaged in the manufacture of coke all the persons engaged in the Connellsville region in mining coal for that manufacture. The Special Agent replies to this method of confounding industries as follows: operation, while 1927 were idle, the per-

May I suggest that the error, if any, is not in my may I suggest that the error, if any, is not in my report, but in the failure on your part to clearly distinguish between the manufacture of coke and the mining & coal for that manufacture. My report only aims to cover the statistics of the manufacture of coke, and in such manufacture coal is clearly a raw material, should be so classed, and is centage of total in activity, therefore, being so reported. It would be no more correct to report the men employe i in mining coal for use in coke-making as engaged in the manufacture of coke, than it would be to report the men employed in mining iron ore or quarrying limestone, or even in mining iron ore or quarrying innessone, or even in burning coke, as engaged in the manufacture of pig iron. There is a very clearly marked distinc-tion between the two industries, mining coal be-longing to one of the six great divisions of occu-pation—mining—while coke-making is a manufac-ture of coal, and belongs to another class of occu-pation—manufacturing. pation-manufacturing.

The trouble with the journal in question seems to be that it is anxious to increase the importance of the coke industry; in fact, this has seemed to be the trouble in all the attacks that have been made on the census.

The census officers, as we understand their method of work, propose to give the statistics of certain industries. In scores of these industries, what is the product of one is the raw material of the other, and it is the design of the census to make clearly-marked distinctions between these different indusmay be accepted as indicating to some extent tries. The census tables, as well as the general practice of persons accustomed to statistics of manufacturing industries, classify these industries into six great divisionsagriculture, personal and professional services, trade and transportation, manufac turing, mechanical, and mining. This is reasonable and proper classification, and unless each industry is kept within proper bounds, and unless those statistics included under that industry properly belong to it, the utmost confusion would result. For example, as the Special Agent states, the mining of iron ore is as much a part of the manuduring 1882, and of this quantity the North facture of pig iron as the mining of coal is a part of the manufacture of coke, but it would be evidently absurd to say that the statistica of the mining in either case should be included under the manufacture of the mined number of works engaged in turning out this description of finished iron amounted to the editor of the paper referred to above desired to have done; indeed, he quantity exported during the year is stated to have been 46,532 tons, so that a remainder ing paragraph, of an editorial, in which "To express the whole matter he says: he says: "To express the whole matter "in a few words, the report of Agent "Weeks magnifies the coal trade at the "expense of the coke trade." In other words, the paper in question desired to have the coke trade magnified at the expense of the coal trade, while the object of the census was to give to each what belonged to it.

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It is

Our Foreign Trade in Spelter.

As spel'er is about the only metal which has stood its ground tolerably well during the weak state of affairs prevailing since the beginning of the year, it is more than likely that importation of it may recommence after a while on a larger scale, should the price advance sufficiently to leave a margin for it, however trifling. It will be well to see, therefore, from the statistics of the past seven years the position of this metal in our market, and the probable effect of a large

DOMESTIC EXPORT.

Calendar years.	Zin	e ore.	Spelf	Totals.	
Cale	Cwts.	Value.	Pounds.	Value.	Value.
1876	6,098	\$39,151	731,240	\$60,505 166,551	\$99.746
1877	13,255 14,660 14,048		3,097,823	255.104	343.943
1881	5,519		1,737.771	154,817	\$40,347 \$74,205
1882	3,817	14.477	1.159.944	98,008	133,378 112,485
Total	76,417	\$275.532	11,336,880	\$954,803	\$1,230,335

Total 76,417 \$275.	532 11,336,880	\$954,803	\$1,230,33
	IMPORT.		-
~Spe		-Sheet	Zinc
Years. Pounds.	Value.	Pounds.	Value.
1876 504.958	\$48,816	1,601.014	\$121,45
1877 1,138,490	53-579	1,352,149	77.67
1878 1,101,665	48,157	856,230	45.59
1879 4.272,107	180.365	2,621,601	224.17
1880 6,160,653	394.193	4,290.609	831,91
1881 5,510.676	210, 323	3,670.791	818.87
188225,651,509	1,024,334	4,668,561	215.79
Total 44,340,116	\$1,859.757	18, 367, 844	\$9.25,48
1 11	RE-EXPORT.		
		Sheet	
Years.		Pounds.	Value
1876			\$1,08
1877			19
1878			****
1879			1,274
1880			3.980
1881			8,490
1882		. 11,335	58
Total		. 154,330	\$8,616

During the seven years we imported 44,-340,116 pounds of spelter and 18,367,844

and re-exported during the same time, 154,-340 pounds of sheet zine, leaving 62,553,621 trust those representatives to do for them the pounds net, or 27,926 tons. Deducting from this amount 11,336,880 pounds, or 5061 tons, loyally uphold them in what they do, there of domestic spelter, which we exported, it can be no method of settling disputes about appears that there were retained altogether wages except by strikes. Certainly if they 22,865 tons, or an average of 3266 tons per will not believe one another and trust one

spelter mining, smelting and zinc manufac- the integrity of their representatives and the turing industry, the importation of both good will of the operators there can be no spelter and zinc has, it will be seen, become quite restricted, if we except last year, and there must be some special inducement, such fix wages, especially when a sliding scale is ously resumed without detriment to our known to the public, but they can be the metal is watched by importers with considerable interest. Spelter is at present at a action by those whom they represent. moderate figure, and the experience of 1882, which we believe was encouraging to importers, is likely to inspire confidence, especially as its statistical position here is

Arbitration in the Western Coal Trade.

Another attempt to substitute arbitration for strikes in a portion of the coal mines of Western Pennsylvania has resulted, as did the previous one, in an utter failure. It railroad pits in the vicinity of Pittsburgh, make a scale for mining coal in these pits, gave up the attempt in atter despair. This filling their places, and had succeeded in with this same industry has also ended in failure, though there is a slight hope that perate, and for some days past have been another effort, and possibly a successful one, may be made to fix the price of mining without a strike. This last attempt originated with the miners some months since, and the formation of the board grew out of a request of the new officers of the Miners' Association for a consultation with the operators looking towards arbitration. Committees representing both sides were appointed, but on meeting it was found that the miners' representatives were not endowed with full power to act, and the operators refused to proceed until they were. This caused some delay until such authority could be secured from the workmen. Last week the final meeting of the board was held. The miners proposed a scale for digging, per 100 bushels, as

On the wall,	Mining
\$6.00	\$3.40
6,25	3-55
6.50	3.70
6.78	3.85
7.00	4.00

The scale presented by the operators was :

On the wall,	Mining.				
6.00	3.10				
6.35	3.20				
6.50	3.40				
6.75	3.50				
7.00	3-75				
7.25	3.85				
7.50	4.00				
7.75	4.15				
8.00	4.25				

Both of these scales were rejected by a tie vote, all the miners voting for their scale and the operators against it—and all the to fix the price for a given length of time Association has written to the Operators' Association, suggesting that if they will furnish the Amalgamated Association as a body, but the data to prove that the rate for mining ought to be what the operators demand, the miners will be willing to accept it. What

the result will be cannot be easily foreseen. It is certainly to be regretted that this new attempt at arbitration has failed. Both sides, so far as the arbitrations were concerned, seem to have approached the discussion of the question in a spirit of fairness and a desire to reach a conclusion that should avoid a strike. The miners' officers certainly seem to have done everything in their power to make the arbitration successful, and, even when it failed, have shown a determination not to abandon the attempt so long as there is the least hope left. Just ful outrages. that has been the cause of the failure it is extremely difficult to say. Probably a number of causes have contributed to it. The probability is that the miners at large may state of the market as would have been pay for it at retail, and when they are

the hands of their representatives, and then best that the circumstances will permit, and another, they will still less believe and trust Since the development of our Western the operators, and until there is confidence in successful arbitration.

as a supposed insufficiency of domestic produc- proposed, the basis of that sliding scale must tion, to again stimulate the import to any-thing like what it was in 1882. If all the uses to which spelter and sheet zinc are put are active, of production to this selling price, and the including the galvanizing of barbed fence cost of production cannot be known to the wire, it may easily be that we shall not pro- employees at large. There is hardly any duce enough at home, and the import, at state of the market in which it would not be least of spelter in slabs, may then be vigor- the greatest folly to make all of these items market. But at best the importation is not made known to the representatives of the without risk, for the moment the mark is miners, and statements made regarding them overshot, and too much piled upon the American be proven, and when these statements can market, months of dullness and decline have been made to them and they are conensue, for the metal does not recover easily vinced of their truth, they should be allowed after depression. In view of these facts, to follow out their own judgment as to what

The Springfield Strike.

We have already given in our columns a statement regarding the strike of the iron and steel workers at the mills of the Springfield Iron Co., at Springfield, Ill., and the success that this mill had attained in running their works non-union. Last week the at tempt to intimidate the non-union men that had been in progress ever since they begun will be remembered that about the 1st of work culminated in an attack on a number October, 1879, a board of arbitration was of them by the strikers, which resulted in formed in connection with mining coal in the the murder of one and the wounding of two others, one of whom will probably die. The which, after an existence of about three circumstances under which this attack ocmonths and several unsuccessful attempts to curred seem to have been as follows: The men, seeing that the company were rapidly second attempt at arbitration in connection getting about enough men to run double-turn in all departments, have lately become desattacking such of the new men as they could find alone, or in such small numbers that they could not protect themselves. On the 13th, four of the new men left the works for a walk in the country, and while they were a mile and a half or so beyond the works they were attacked by 30 or 40 of the strikers and severely beaten. Two of them returned to the works, but the other two were driven off with a threat that if they returned to the works they would be When the two men returned without their comrades there was great excitement at the mills, and the men stopped work in all departments, saying that they intended to see if they could find the absentees, and to demonstrate to the strikers that such outrages could not be endured any longer. After dark some 18 or 20 of the men left the inclosure which surrounds the works, and were ambushed and fired upon by a party of men concealed around a coal shaft and in some empty coal cars. Doublebarreled shot guns were used loaded with very large shot. One man was killed, another was seriously wounded and the third very slightly.

This outrage has aroused a terrible feeling of indignation in the community, and from this time forward the strikers will have a hard time of it. The company are determined to break up all of their assemblages, so far as the law will reach them, and to thoroughly protect the new men. They in thoroughly protect the new men. They in thoroughly protect the new men. They in for some years associated with Andrew turn express themselves as determined to stand by their employers. The result will of the Atlas Works, and others. He became operators voting for the scale they presented probably be to stop all further riotous proadopt these scales an attempt was made very careful for a time, the business will go on with less interruption. The men have been without a scale, but this failed also, and the brought from such a distance that there is board adjourned sine die. Since the adjournment, however, the secretary of the Miners' beard and esteemed ment, however, the secretary of the Miners' beard and esteemed in iron circles, and his excellent judgment Now, we do not charge this murder on

> the arrests that have been made in connection with it indicate that members of the Amalgamated Association were concerned in it, and they will be held, and justly held, responsible for it as an organization, unless at the first opportunity that offers itself they strongly condemn murder as a means of carrying out their ends. There can be no doubt that this attack was intended to benefit the strikers, who are most of them members of the Amalgamated Association, and it is due to the good name of the organization at-large, and its previous history, that it make haste to accept the first opportunity to condemn in unsparing terms such fright-

The first quarter of the present year was marked by considerable depression in almost all departments of the British iron and steel not have been as thoroughly posted on the trades, various causes having worked together in checking the demand and curtailadvisable. Their knowledge of the price of ing the consumption. Stormy weather on coal is largely made up from what they have the coast hindered shipments and retarded work in the shipbuilding yards, while the unold that coal is selling at wholesale at from certainty due to our tariff question unhinged 6 to 7 cents while they have to pay from 9 to the Transatlantic trade to a greater or less ex-It cents for it, they are very much averse to tent. The course of prices at the opening of elieving the statement of the operators. the year had a downward tendency, and even There is no doubt, however, that one chief now several of the markets present anything nt in the failure of arbitration is a but a pleasing spectacle. In some descripack of confidence in one another among the tions of raw iron, however, there has been a miners. Until the miners or any other body slight improvement during the last month

pounds of sheet sine; together, 62,707,960; of workmen are willing to put their case into CONDITION OF THE BLAST FURNACES OF THE UNITED STATES, APRIL 1, 1883.

(Compiled for The Iron Age.)

				CHARCO	AL.			A	NTHRA	CITE,		1	BITUM	INOUS	OR C	OKII.
	Location.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast,	Capacity per week.
	nd			730	6	460	1	0		1	160					
				555	9	644	41	27	6,522	14						
New Jersey	7						18	IO	2,760	8	1,975					
Spiegel							3	I	55	2						
Pennsylvan	ia. alley.	36	18	955	18	972										
Lehigh V	alley						51	43	11,590	8	1.754					
Schuylkil	l Valley						49	28	6,800	21	4,210					
	squehanna Valley								3,799	IO						
Lower Su	squehama Valley						41	30	5,365	II						
Pittsburg	h											16	14	10,637	2	1,30
Allegheny	Valley											4	4	735		h
Shenango	Valley											31	12			15.47
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Juniata a	nd Conemaugh Valley											25	15			
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			6	325	25	1,137]				13	4	1,200	9	
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	ija		1		5	525						7	3	1,042	4	1.61
Ohio-Maho	ning Valley											18				
Eastern,	Central and Northern	3	0		3	263						21	13			
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	Rock			1,605	II	960						15				
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Kentucky												3	3	1,150	0	
Hanging !	Rook	7	2	190	5	475										
	region and Miscellaneous		0		5 8	695										
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			3	334	3	133						X	X	550		
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	• · · · · · · · · · · · · · · · · · · ·		0		I	140						2	2	295		
												16	8	6,460	8	5.17
Michigan		26	12	2,623	14	2,745						2	0		2	58
			7	980	5							3	0		3	1,54
												8	4	2,310		2,10
Utah		· · · · · · · · · · · · · · · · · · ·														
Colorado												I				
		-					-		-			-	-		-	
	*************			11,032												

of the quarter, and it is thought that a similar movement will soon take place in the finished-iron trade. Increased purchases on American account are also looked forward American account are also looked forward to, thus making the general outlook for the new quarter more encouraging.

Washington reports have it that the Naval Advisory Board is in favor of equipping League Island Yard, near Philadelphia, with a plant and machinery necessary for the construction of iron and steel ships. Naval officers believe that the action of Congress in authorizing the construction of new steel cruisers is a forecast of the future policy of the Government touching the navy, and that the war vessels of the future will be of steel or iron, and also that the Government will soon appreciate the importance of being able to build its own ships.

OBITUARY.

John R. Wilson, a well-known iron manufacturer of Pittsburgh, a member of the firm of Wilson, Walker & Co., Limited, and of the Lucy Furnace Co., died at his residence in Allegheny, Pa., on Sunday morning last.

Mr. Wilson was born in 1835. In company with his two brothers, Homer and John, he want to California about the wear 1857 On. some years since, at its organization, a member of the firm of Wilson, Walker & Co., which purchased the lower Union Iron Mills, at Pittsburgh, and has been largely engaged in the manufacture of forgings, especially of railway and car iron. Mr. and cautious, but progressive, spirit had led to his advice being sought in difficult times by his associates in the iron trade.

Reorganization of Brown, Bonnell & Co.—It is reported that the Clevland stock-holders of Brown, Bonnell & Co., at Youngs-town, have made a proposition to the creditors, looking to a reorganization of the company on a new basis. The proposition is reported as follows: I. That Amasa Stone, D. P. Eels, Colonel W. H. Harris, C. A. Otis and various other Cleveland stockholders of Brown, Bonnell & Co. shall at once organize a new and distinct corporation, with a capital of \$1,000,000, and assume all the obligations, property and franchises of the present company. 2. That this new corporation will agree and bind itself to pay off all the indebtedness of Brown, Bonnell & Co., dellar for dollar, in four annual payments, with interest at 6 payments, and payments. the formation of such new corporation.
It is reported that this proposition has been assented to by all the Youngstown creditors. The gentlemen whose names are mentioned above will have no trouble in carrying out their agreement if it is accepted, and it certainly would be the part of wisdom for the creditors to accept. In many cases it is believed that the creditors would accept stock in the new concern for their accounts

As the question of Swedish trade-marks will undoubtedly be brought up should litigation ensue in the alleged fraudulent trans-

that is very useful to those dealing in it. A reference to Ahrenberg's book would per-haps have done much to bring about a different issue in the case which has caused so much trouble in England. When buyers are offered Swedish iron at less than the market value, as in this instance, they will do well hereafter to refer to Ahrenberg's "Sampel-Bok," and see if they can there find the brand offered to them.

Protests Against Low Iron Rates in the Canadian Tariff.

The following has been sent to members of the Dominion Parliament:

April 6th, 1883. To _____, M. P., Ottawa: We call your attention to the proposed readjustment of the iron tariff, and beg to submit for your information that, before confederation, the tariff on bar iron in Ontario was 20 per cent., with no duty on the raw material, and that the tariff on bar iron under the national policy is 17½ per cent., less \$1 to \$2 duty on scrap, &c., leaving a protection of about 12½ per cent. only until the present readjustment, an inadequate amount to compete with foreign iron of general merchant sizes as used by the public. Under this policy, only three Canadian mills attempted to comonly three Canadian mills attempted to compete with England, &c., in general merchant iron; two of these mills use scrap iron exclusively, and the other one uses pig iron, which they make from the ore. It is now proposed to give the pig-iron makers a bonus of \$1.50 per ton on all the iron made for a certain time. This bonus is equal to nearly \$1.87 per ton on bar iron, as it will take nearly 1½ tons of pig iron to make a ton of merchant bar iron, and it is intended to give this third concern the benefit of this, to the exclusion of the other two, who have been as well endeavoring to meet the same unreas a conservative policy and of Carlisle an ultra policy of tariff for revenue only, regardless of home industrial interests.

A STATISTICAL REVIEW.

Taking a statistical view of the situation, the way the question now stands, with the way the question now stands, or a statistical view of the situation, the way the question now stands, estimated upon the claims of the friends of the respective candidates, is about as follows: The Democratic party goes into the next House of Representatives with a majority of 59.

This would give the Democrate 191, and Republicans and Greenbackers of Republicans and Greenbackers of Republicans and Greenbackers. as well endeavoring to meet the same unremunerative markets with the expectation munerative markets and cautious, but progressive, spirit had much to do with the eminent success of the firm of which he was a member, and also led to his advice being sought in difficult. general elections.

We ask you as legislators to see to it that this injustice is not done us, and to see that the other establishments who have been endeavoring to compete with the imported mer-chant bar receive an equivalent to the bonus, as well as the makers of merchant bar iron made from the pig metal, thus putting us all on the same footing. We would further call on the same footing. We would further call your attention to the fact that it is just as important to encourage and build up the manufacture of bar iron for general purposes as it is to encourage the manufacture of pig iron alone, as a very large part of the market for pig iron should be from these bar-iron makers, and is everywhere elee, and will be in Canada if you will see this matter righted and justice done. We would also refer you to the tariffs of other countries to show that the more advanced an article is in manufacdollar, in four annual payments, with interest at 6 per cent per annual, the period of four months from May I to be allowed for the formation of such new corporation. It is reported that this proposition has been This will not be the case as it is now proposition to the case as it is now proposition. posed with iron in Canada, as pig ir to have a bonus of \$1.50 per ton, to have a bonus of \$1.50 per ton, with the present duty of \$2, equal to \$3.50 per ton in all, on, say a valuation of \$15, would be equal to nearly 22 per cent., while bar iron, esting more than twice as much for actual labor spent, has only 17½ per cent. All bar makers outside of the furnace owners, under the proposed tariff must go out of the business if you don't see this matter righted.

We trust you will see the injustice of the DIGEST OF DECISIONS. proposed adjustment, and amend the tariff

"general merchant bar sizes of iron made from other raw material than pig iron in Canada, and competing in the same markets."

Respectfully yours,

ONTARIO ROLLING MILLS Co.,

Hamilton, Ont.,

Scovil & Purdy, St. John, N. B., Manufacturers of Merchant Bar Iron.

WASHINGTON LETTER. (From Our Own Correspondent.)

WASHINGTON, D. C., April 18, 1883. THE SPEAKERSHIP AND THE TARIFF.

The contest over the Speakership of the Forty-eighth Congress, nearly eight months off, waxes hotter every day. The friends of the rival candidates seem to appreciate the importance of being early in the field, and since the adjournment of Congress no time has been lost in communicating with Representatives, old and new. Ex-Speaker Randall has divided his time between Washington and New York. Representative Cox, of New York, remains in the city and is in intercourse with his friends. Carlisle is running his machine in the West, while Springer, of Illinois, is working the Washington end. The dividing line is, as already stated, s contest between free trade and tariff, within the ranks of the Democratic party, a ques-tion which the Speakership will determine in a great measure, so far as aggressive legis-lation is concerned. The election of Randall means a conservative policy and of Carlisle an ultra policy of tariff for revenue only, re-gardless of home industrial interests.

sympathies 134, out of a membership of 325. The friends of Mr. Randall, who have been making a still hunt of it, thus far count 84 votes secured for their choice. In the Democratic caucus, were every member present, it would require 96 votes to secure the nomination. Therefore Randall, thus early in the contest, only lacks 12 votes necessary to success. It is not likely, however, that there will be more than 180 present; in that case, but of would be necessar; to a choice. The vote claimed by Mr. Ranto a choice. The vote claimed by Mr. Ran-dall's friends embraces the Democratic Representatives from New England, part ose from New York, and all of New Pennsylvania, Delaware and Maryland. He will also divide Georgia, Alabama, Louisia Missouri, Indiana, Obio and Michigan. Cox will take the rest of New York and has an enthusiastic following in a number of States. The Carlisle cohorts are made up almost entirely in the South, and not all of that vote, and a scattering vote in the

THE DARK HORSE IN THE RACE. The odds among the knowing ones seem to be in favor of Mr. Randall. Some think that the race between the two principal contestants. Randall and Carlisle, will be so stubborn and evenly divided that a dark horse will lead the field. In this event, the friends of Mr. Cox are holding him in training for a walkover. There are some who have not committed themselves, and who will not, but say that they will await developments. This unknown factor will decide the contest and will say whether the tariff question shall

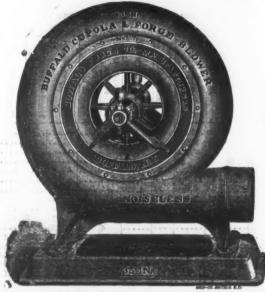
The digest of decisions already referred to, actions in Swedish iron, referred to else- clause to include a bonus or equivalent on and from advance sheets of which the de

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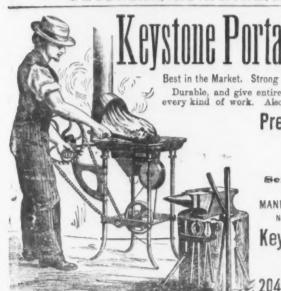
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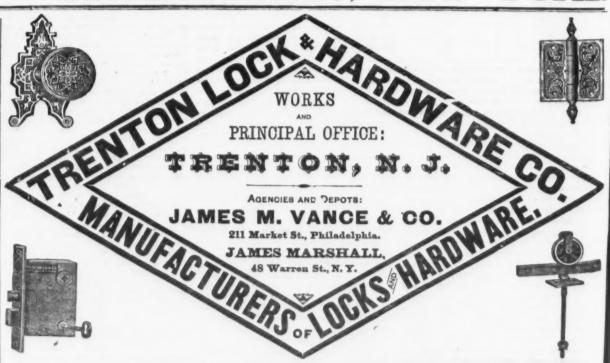
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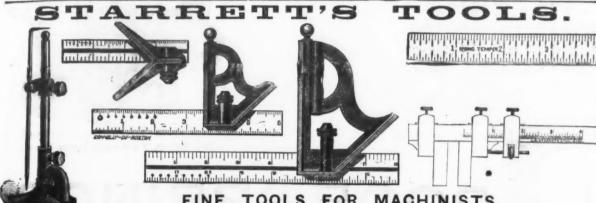
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CAUTION. -In the Circuit Court of the United States, District of Massachusetts, January 31, 1883, Judge Lowell rendered a decision in the suit brought by L. S. Starrett, of Athol, State of Massachusetts, against The Standard Tool Co. and the Athol Machine Co. for infringing his patented squares, fraudulently stamping and advertising them as Chaplin's Patent. The court sustained Mr. Starrett's patents, and declared them infringed. An injunction was ordered against all the defendants. I hereby give notice that I shall hold all persons responsible who use or sell any infringement on my squares.

STARRETT, Athol. Mass.

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FRAS. B. BANNAN,

cisions affecting iron and steel have been given in this correspondence, is now ready for distribution. The official title is "A digest of the decisions of the Treasury Department, relating to the tariff, navigation, &c., from 1872 to 1882, inclusive, with the tariff on imports into the United States and the free list indexed, and the Hawaiian reciprocity treaty." In referring to this valuable contribution to the literature of revenue and tariff, the following interesting and important facts are given: The work was begun, and the greater part of it prepared, by Mr. Frank M. Eastman, and was completed by Mr. Charles R. the literature of revenue and tariff, the following interesting and important facts are given: The work was begun, and the greater part of it prepared, by Mr. Frank M. Eastman, and was completed by Mr. Charles R. Dean and Mr. T. D. Sanders, all under the direction of Assistant-Secretary H. F. French. It contains a digest of all important decisions relating to the tariff and navigation, and the Marine Hospital, steamboat inspection and revenue marine services, from 1872 to 1882, inclusive. It contains also Title XXXIII of the Revised Statutes, "Duties upon Imports," with amendments. This is arranged as the tariff indexed, in which the items of the tariff are numbered for convenient refer-New York Office, 79 LIBERTY STREET.

T. Sec. and Treas. GEO. H. SELLERS, Gen. Supt.

T. Sec. and Treas. GEO. H. SELLERS, Gen. Supt.

T. Sec. and Treas. GEO. H. SELLERS, Gen. Supt.

The digest refers to the decisions in the 11 volumes of the "Synopsis of Decisions" from 1872 to 1882, inclusive, by the original numbers. It refers incidentally to some decisions in earlier volumes, but is only complete wi hin the dates named. The work is intended chiefly for the customs service, but will be valuable to manufacturers for refersions. will be valuable to manufacturers for refer-ence upon any questions respecting the rela-tions of their ewn productions to the customs duties and imported articles.

THE NEW TARIFF ACT.

Since the manuscript of this work was prepared, the tariff of March 3, 1883, has been enacted. It will be printed by the department, with the paragraphs numbered as tariff indexed is, and will be cited by the department and customs officers as "The Tariff of 1883.

JUDGE KELLEY ON PROTECTION

The remarks of Judge Kelley, Chairman of the Committee on Ways and Means of the last Congress, at the banquet given in his honor a few days ago, have caused considerable uneasiness to some of the leaders still lingering here in the interest of a free-trade Speaker of the Forty-eighth Congress. The facts and the figures stated by Mr. Kelley are incontrovertible, and the circulation which while, during the existence of a customs tariff between 1850 and 1860, based upon the revenue idea, the production of iron and steel was stationary, and but 39,000 hands were employed, during the next two decades, under a protective policy, the number of bands employed increased to 140,000, and the amount of capital invested rose from \$50,000,000 to \$230,000,000. The wages paid in 1860 were \$12,000,000, and in 1880, \$55.000,000. The value of material consumed was, respectively, \$34,000,000 and \$190,000,000. He also demonstrated by authenticated coo. He also demonstrated by authenticated data that the emancipation of the American people from the free-trade doctrines forced upon them by the subtle influences of foreign manufacturers, and their selfish and un-patriotic subsidized agents among our own people, had increased the value of our iron people, had increased the value of our from and steel manufactures from \$60,000,000 to \$296,000,000. The consolation which the free traders in Congress had always taken from the allegations that the metallurgical indus-tries had been specially favored in the matter of legislation was exploded by comparison with other branches of industry.

THE IRON INDUSTRIES NOT SPECIALLY FAVORED. The speaker referred to carriage building as answering this point, showing that, where 20 years ago such a thing as an American-built carriage made from parts manufactured in the United States was unknown, to-day there are mere pleasure carriages built an-nually in the state of Ohio alone than are turned out in England and France combined. The extent of this industry may be appreciated when it is stated that the census of 1880 gave 43,000 establishments for carriage building and smithing, employing 105,000 hands and paying \$38,000,000 in wages.

VALUE OF A HOME MARKET.

Heating and Purifying Water for
Steam Rollers

Judge Kelley went further, and, in setting forth the circumstances attending railroad development and the extent to which it was carried during the two decades from 1860 to 1880, conclusively illustrated that the home market had contributed to this result. working people meanwhile received good wages and had plenty of work, so that no one was any the poorer by a scale of prices and wages rated on a standard of fair remuneration, inst ad of being pruned down to the pauper rates of the Old World. At the same largely held in the Western and Southern EFFICIENCY

At Less Cost

Then any Other.

Wite for price in the control of the United States states, with about 3 per cent. more than usual on hand.

The returns of wheat indicate 28 per cent. or about 143,000,000 bushels, of the crop of tective policy. The dissemination of just such information in a popular way, apart

On hand, or these. write for prices and urber information in a popular way, apart from political interests and surroundings, will have more influence upon the minds of the great mass of the people than any form of elaborate argument which the ordinary reader has no disposition to wads through. The tariff issue is one of the inevitables in the next campaign, and such speeches as Judge Kelley's are calculated to bring public attention to the subject by such approaches

THE HOG AS A FACTOR IN THE TARIFF. and Germany with respect to American meats is calculated to add an international HEATHFIELD, EYRE & CO.

158 Leadenhall Street, LONDON, ENGLAND.

IRON, TIN PLATE AND METAL

MERCHANTS.

feature to the protective issue which was not anticipated. The prohibitory decrees which have been issued against these important articles of American shipments by those nations have raised a decided commotion among the Wostern stock raisers and dealers, and they are already in communication with their Representatives in Congress with MERCHANTS.

with their Representatives in Congress, with a view to retaliatory measures. The Westcfi prices. Cable Address Gentlas, 20
cen.

The Pittsburgh Testing Laboratory, which was established a few months since by Wm.

Kent and Wm. F. Zimmerman, for mechanical tests of materials of construction, has

they want protection. As a Western Representative said to the correspondent of The Iron Age, if our people want legislation to protect them against this discriminating action they must unite with the protectionists to secure it. The proposition is to increase the duties on wines and textiles imported for the protection of the protecti ported from France and Germany. In a diplomatic point of view, this would be following the precedent of other countries acting under similar circumstances. There is no doubt that this will compel a coalition of the parties interested in the shipment of meats with those favoring a protective tariff for mutual support and benefit.

A CALL FOR AN EXTRA SESSION

Among the passing incidents of official routine at the Executive Mansion is a document on the part of certain parties purport-ing to represent certain presumed interests of labor, urging the President to call an of labor, urging the President to call an extra session of Congress to legislate in the interests of labor. If it is not known what interests labor has to be legislated upon, nor is it at all probable, unless some specific and imperative reasons can be given, that the request will be granted. A session of Congress is an expensive indulgence, and the Constitution prescribs as much of an infliction of that sort as the business and industrial tion of that sort as the business and industrial interests of the country can stand. In salaries alone for Senators and Representatives ries alone for Senators and Representatives it costs over \$200,000 a month. This does not include mileage, incidentals, pay of officials and other expenses attending the running of the law-making machine. But it might be well for those who are now pressing for an extra session to anticipate the fact that before Congress in its first regular session shall have finished up its work they will have quite enough of it. The formidable free-trade element which enters into the composition of the Forty-eighth Congress will composition of the Forty-eighth Congress will in all probability make matters interesting for them by attempts to reduce the tariff and bring American labor down to the starving rates of foreign labor. It must be apparent to all classes of the people that the agitation of the tariff, with all its baneful tendencies, is one of the chief points upon which the majority propose to make an issue. Therefore, those who claim to make the request of the President, as above indicated, had better the President, as above indicated, had better enjoy the benefits which they now have, as they will secure nothing more the way things now stand.

THE LABOR INVESTIGATION.

While an agitation in a small way has been eccasioned by a few labor men asking for an extra session, it might be observed that senator Blair, Chairman of the Senate Committee on Education and Labor, was in the eity a short time ago preparatory to holding a meeting preliminary to the investigation of the cause of strikes and relations of capital and labor. The Southern members having expressed a desire to visit their plantations during the season of seeding, the chairman agreed to delay the commencement of work on the subject matter before the committee until convenient to them. The chairman thought that it might yet be several weeks before the committee could get together. It might be as well for the laboring interests represented in the request for an extra ses-sion of Congress to await the action of this committee for a report pointing out the way of legislation on this most difficult of sub-

CONSUMPTION AND DISTRIBUTION OF CROPS As the crops have a direct and important As the crops have a direct and important bearing upon the activity of all classes of business, the report of the Department of Agriculture, just issued, affords some important information upon the distribution of corn, wheat and cotton, and the comparative quantity still remaining in the hands of growers. The following facts therefore may be interesting. On March 1 the returns show about 36 per cent., or 588,000,000 bushels, of the corn crop of 1882 still in the hands of the growers. Of this aggregate in the different geographical divisions the proportion on hand is as follows:

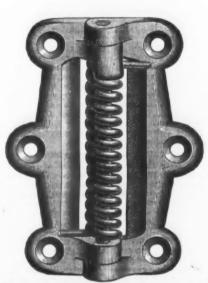
	On hard March 1, 1883.	Per cent. of whole crop.	
New England	1,898,701	29.8	32.6
Middle States	29.397.288	37-4	36.7
Southern States	171,557,062		35.9
Western States	381,600.006	33.8	32.9
Pacific States Nevada, Colorado	735-734	25.4	24.5
and Territories	2,282,552	34.0	25-5
Total		36.3	33.7

time, the internal trade of the United States States, with about 3 per cent. more than

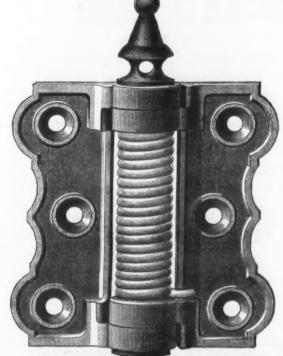
20 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0	New England Middle States Southern States Western States Pacific States Colorado, Dakota		Per cent. of whole crop. 37- 35-6 25- 89-2 23 a	Per cent for 5 years. 38. t 34. 7 22. 27. t 25. 9
ı	and Territories.	4.318,256	23.8	23.9
	Total The largest quar		a8.5 held in	26.9 Ohio for

higher prices. It will be seen that over 2 The action of the Governments of France and Germany with respect to American neets is calculated to add an international aggregate of 5,900,000 bales gone forward

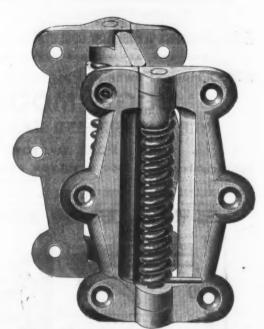
SARGENT'S SPRING HINGES,



MALLEABLE IRON, BRASS SPRING. No. 250, To Swing One Way.



RATCHET, Tinned Spring. Berlin Brouzed,



MALLEABLE IRON, BRASS SPRING. No. 2250, To Swing Both Ways.

ROD AND COIL

Put the Brackets on as seen in the cut, and on the opposite side of the Steel Rod for a door swinging the other way.

Put the ratchet wheel in the bottom bracket, with the teeth toward the Pawl or Stop.



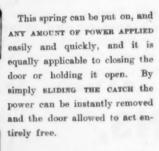


Apply the wrench to the end of the rod below the bottom bracket, twist the rod until sufficient power is obtained, and then push the pawl into the teeth of the ratchet wheel.



Bottom Bracket, with Ratchet Wheel and Pawl in Place.

TORREY DOOR SPRINGS.



The same Spring is suitable for a Right or Left Hand Door.



DOOR SPRINGS,

BEST in the MARKET. The mechanism for adjusting the Victor and Champion is the same.

Put on the spring diagonally, with the top always to the right.

Put on the top bracket first, and as near the edge as possible.

Then put on the bottom bracket, which also should be near the edge.

To tighten the spring, lift the collar or fastening; apply the wrench and tighten the spring as desired by turning to the left; when taut as wished, drop the collar back to

Easily adjusted. No pieces to lose. Tension can be applied or released



HAMMOCK AND SWING HOOKS, AND AWNING PULLEYS.

SCREW HOOKS,

Plain and Galvanized.

From 5-16 inch to 3-4 inch, Iron.



Either

Right or

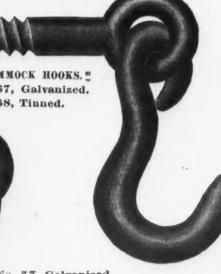
Left Hand.

Packed Complete

With Screws

and Wrench

HAMMOCK HOOKS. " No. 67, Galvanized. No. 68, Tinned.





No. 57, Galvanized. No. 58, Tinned.

EYE BOLTS, Plain and Galvanized.



SWING HOOKS, Plain and Galvanized.

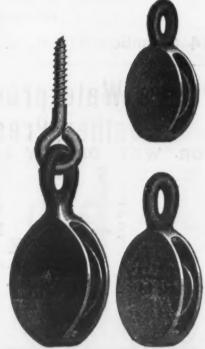


1-2 x 10 Inches and 5-8 x 11 1-2 Inches.





AWNING PULLEYS. All Sizes.



nsi liad do strand da dig du ha sta me wo the doc the doc the doc the strand da strand

O. HARDWARE MANUFACTURERS

convenience of its patrons. The laboratory will shortly issue a new circular and price The laboratory list for both mechanical and chemical tests.

An Iron Sailing Vessel.

The first sailing vessel built wholly of iron was launched at Chester on the 14th inst., from the yard of John Roach. She is owned by Mr. W. H. Starbuck, and is intended for the Oregon trade, and is of extremely light draft, to permit of her passing over the Columbia River bar. The keel of a sister ship to this one, also for Mr. Starbuck, has been laid at Mr. Gorringe's shipyard, at Philodelphia and the ship will be ready for Philadelphia, and the ship will be ready for launching in about four months. The ship just launched is 270 feet over all, 248

feet on the low-water line, 42 feet beam, 23½ feet depth of hold, and, with a dead weight of 3750 tons of cargo, will have an extreme draft of 21 feet 6 inches. With 2500 tons of weight she will draw 18 feet 9 inches. It is weight she will draw its feet of inches. It is calculated that she will carry 4250 tons of measurement. Her keel was laid in Decem-ber last, and is of the best hammered iron, 10 by 3 inches; the stem and stern-post of 10 by 3 inches; the stem and stern-post of the same material, 10 by 4½ inches. Her frames are 6 by 3½ inches, span 2 feet from center to center. The lower deck-beams are 11 inches by 11-16ths inch, and those of the upper deck are 10 inches by 10-16ths inch. The plating is laid lap-streak throughout, 15-16ths inch from the garboard, and 12-16ths above the bends. Both decks are and 12-16ths above the bends. Both decks are laid in narrow planking of yellow pine, 3½ x 3½ inches, which has an extremely fine effect. The mast partner-plates are of extra size, and are secured by diagonal braces to the stringers. In fact, the upper deck, for its whole length, is diagonally braced, while its whole length, is diagonally braced, while there are diagonals at each partner on the lower deck. Under each mast for a space of 20 feet is a heavy rider keelson, The ship has been built under an especial survey of the Bureau Veritas, and the surveyor, who was present at the launch yesterday, said that the Tillie E. Starbuck is the strongest and best-built vessel that has ever passed under his inspection. She will receive from under his inspection. She will receive from the bureau its highest classification. On deck she will have a low topgallant forecastle, with a chain life-guard around it. Between the fore and main hatches is an iron deck-house, in which will be the galley, the quara poop deck about 90 feet long, beneath which is the cabin, which is entered in from the main deck and also from a companion-way on one side of the after part of the poop deck. Abaft on this deck is a wheel-house for the helmsman, inclosed in which is a right and left screw steering-gear. Below are rooms for the captain and officers and two spare staterooms for passengers, and in the forward part of the poop is the pantry

A Burglar-Proof Treasure Vault.

The State Safe Deposit Vaults in this city are of very ingenious construction, and while possibly not impregnable, the chance of their eing broken into at any time is certainly ery small. The interior dimensions of the very small. The interior dimensions of the great vault are: Length, 46 feet width, 18 feet; hight, 8 feet. All of the walls (bottom, top and sides) are made of ½-inch plates of welded five-ply steel and iron, and are thicker and heavier than those of any other similar structure in the country. Every plate was tested before being used, and found to be "drill-proof" under 200 tons pressure upon the drill, which is a far greater pressure than all the burglars in the world will ever he able to bring against a safe. Attached to this vault, and being made a part of it by solid bent and welded angles interlocked into the vault walls, and fastened with conical arbors, are two large vestibules, very small. with conical arbors, are two large vestibules, or doorways, constructed of the same mate-rial, in the same manner, but of still greater rial, in the same manner, but of still greater thickness. To each doorway are two pairs of folding burglar-proof doors. Both the outer and inner doors are of tremendous thickness and strength. The edges of the doors being dovetailed and having double rows of tenon and groove, are both wedge and explosion proof. All the doors are swung on Hall's patent traverse hinges, and, by the use of levers, move squarely in and by the use of levers, move squarely in and out of the tenon and groove and dovetail in jamb. Each vestibule, with its doors weighs over 16 tons. The vault doors are furnished with combination bank locks. On each of the outer doors is a double time lock, with a province devices in case of locks. with opening device in case of lockout-an ingenious invention as well as a valuable improven roof wall of concrete surrounds the whole of this huge vault. Inside the vault is ample room for 2000 boxes of different sizes, the larger ones having of different sizes, the larger ones having square bolt frames, round bolts and combination locks, the smaller boxes having peculiarly-adapted tumbler key locks. The windows on the street are guarded by chrome steel and wire gratings of extra thickness and weight. The vaults are proof against dampness and impure air. They are well lighted. Two watchmen are constantly on duty all night, with indicators to show every half-hour that they are wide awake and conhalf-hour that they are wide awake and constantly at their posts. These are supplemented also with patent burglar alarms working by electricity, which give notice of the approach of any person, even on the

James Marshall & Co.-Telegraphic James Marshall & Co.—Telegraphic advices from Pittsburgh, under date of April 16, made the following announcement: "James Marshall & Co., iron pipe manufacturers, one of the largest firms in the business, made an assignment to-day to George . Whitney for the benefit of creditors. The liabilities are \$1,500,000, and the assets about \$1,250,000. The failure was caused by too extensive speculation in pig iron. Since 1879 James Marshall has been purchasing largely of pig iron, under the belief that prices must of pig iron, under the belief that prices must advance. The dullness of trade, after a long strike, then the uncertainty in regard to what Congress would do about the tariff, and finally the failure of the expected advance after the tariff bill had been passed, all contributed to precipitating the crash. The Pittsburgh banks are the largest creditors, but they will lose nothing, as they have coloring in the crash of 192.

just added a chemical department for the laterals for their loans which will realize the amount of the paper held by them. Among outside creditors are Marshall Brothers, Phil-adelphia, the Rockhill Furnace Company, Fayette; Receiver Brown, of Brown, Bonnell & Co., Youngstown, Ohio; Hogsett, Hanna & Co., Uniontown, Pa.; the Dunbar Furnace Company, and the Fairchance Furnace Company. The failure created surprise in business circles. The members of the firm are very highly regarded, and have the warmest supporting of the houngard company. sympathy of the business community,

Accidents in Mines by the Breaking of Winding Ropes.

Looking through our English exchanges we frequently find accounts of fatal pit acci dents resulting from the breaking of winding ropes. Two lamentable disasters of this character, which occurred a short time since have directed special attention to this subject in England, and suggestions for the pre vention of such accidents are freely offer It seems to us that the investigations as to the causes of these accidents are, as a rule, superficial, and that insufficient attention is given to the true causes. Accidents so obviously and easily avoidable as those arising from the giving way of winding ropes should be impossible. Measures have been adopted to enforce due precautions against accidents in mines by compelling proper ventilation and periodical inspection, and preventing the use of naked lights in workings where accumulations of gas are to be expected, but safety in the raising and lowering of cages with their human freights seems to be strangly neg lected. In one of the cases above referred to it seems that the cage was being raised by a rope of which one strand was known to be rope of which one strand was known to be broken, and this, combined with other irregularities in the working of the pit, offers a sufficient explanation of the acci-dent, and at the same time shows how easily this particular accident could have been avoided. In the other case, according to the Birmingham Post, the rope was sound, but owing to some imperfection in the ma-chinery, assisted probably by the pressure of the wind, it did not run true, and mounted the wind, it did not run true, and mounted the flange of the pulley as it was being run out. On passing over the flange it would naturally slip down with a sharp jerk upon the axle of the pulley, and be severed as it passed through the ring of the disengaging plate. This, at all events, is the theory of plate. This, at all events, is the theory of the Government inspector, and it seems, from the evidence, the most likely explana-tion of the accident. But, continues the Post, an explanation is not a justification, and we have yet to learn why the accidental breakage of a rope under such circum-stances should be attended with fatal con-sequences, when, at small expense, every cage in the district might be fitted with a safety apparatus that would arrest it in mid-shaft in the event of the rope giving way. Appliances of this kind are familiar to every owner, and though all are not effective, the worst are better than none at all.

The Harrison Steel Co. vs. the Besemer Steel Co.,—The Bessemer Steel Co., in their proceedings against the Harrison Steel Co. and the Harrison Wire Co., both of St. Louis, instituted for the purpose of preventing the latter two from using the asic process of conversion in the proposed basic process of conversion in the proposed extensive works at Harrison, Ill., under license from Jacob Reese, claim that they own the Reese patents. This is denied by the defendants and the inventor. Mr. Reese is said to have assigned his patents to the is said to have assigned his patents to the Harrison Steel Co., allowing them to use his process. The Bessemer Co. have consequently filed a bill in the Circuit Court of the United States, St. Louis, praying for an injunction to restrain the former company from using the Reese process. In the case, as it was entered, Mr. Reese was not made a party defendant, in view of which the Harrison people urged that he was an indispensable party, and asked the Court that he be so made. Within the past few weeks argument was made on the past few weeks argument was made on the point, and the matter was taken under advisement and continued until the September term. The inference to be drawn from this action of the Court is that the judges see no way in which the case can proceed with-out Reese as a party, and it is believed by counsel for the Harrison people that no other final order will ever be entered in the case

gineers.—The next meeting of the American Society of Mechanical Engineers will be held at Cleveland on June 12, this date having been selected in order to avoid conflict with the American Society of Civil Engineers, which meets on June 10, and the American Institute of Mining Engineers, whose meeting, as stated elsewhere in this issue, will be held during the first week of that month. The members will, by this arrangement, moreover, have a favorable opportunity of visiting the National Exposition of Railway Appliances, at Chicago, thus combining both trips in one, and we do not doubt that the attractive features of the meeting will be instrumental in securing a liberal attendance.

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Fig. 3:—The Second Boiler Before the Explosion.

Dr. Thos. M. Drown, secretary of the American Institute of Mining Engineers, has issued notices to the different members informing them that the next meeting of the Institute will be held at Roanoke, Va., dur-ing the first week in June. A detailed pre-gramme of sessions and excursions will be issued next month, and members are re-quested to send to the secretary as soon as possible the titles of the papers which they intend to present at this meeting.

The report of the British Iron Trade Association, recently issued, shows that the total output of coal in Great Britain for the year

Dangers of Long Cylinder Boilers.

In a recent issue of the Locomotive we find an interesting and valuable article upon the dangers of long cylinder boilers, from the pen of F. B. Allen, which we give entire: Perhaps some of our readers may take ex-

ception to our heading, for we recollect in our early experience connected with the in-troduction in this country of boiler inspection, as a safeguard against explosion, how confidently we were informed by many of our steam users, "Your system is excellent; we wish you every success, but we do not need it. You haven't seen our boilers, have need it. You haven't seen our noner vou? We use plain cylinder boilers." you? We use plain cylinder boilers." Sometimes this was said regretfully at the thought of our having lost so much valuable time, or fore the explosion occurred that this boiler possibly because they could not find even an excuse in their own estimation for the em-ployment of a system of supervision they mmended so highly, such was their con- the men near him that the pump was on, and

being in good working order. The feed sup-ply was pumped from a pond on the premi-ses into a large tank, thence through part of an old boiler—fitted up as an open heater—into the boilers through a 2-inch feed-pipe on top of boiler, as shown, by an independ on top of boiler, as shown, by an independent pump. The main engine exhausted into the heater, possibly raising the temperature of the feed to 80° or 90° when the engine was in operation; when it was not, its temperature would only be slightly above that of the pond, which at that season of the year was 50°. It was quite muddy at the time of our visit, and it appeared, from an examination of the exploded boiler, to form a deposit of the tent broke the camel's back!

At the time of the last repair of this boiler, nearly a year previous, a new bottom balf, b, Fig. 2, had been put in; the boiler-maker, in selecting a suitable sheet, may have measurement by the micrometer gauge shows that it was .022 inch thicker than the inside sheet. We do not know how carefully the work of backing out the old rivets was done, nor what around the following the factors of the explosion of the e

was leaking on the bottom girth seam be-tween the third and fourth courses from the front end; the attendant stated to one of



Dangers of Long Cylinder Boilers,—Fig. 1.—Break Complete.—Projection of the Shell.

We are not insensible to the many advantages in accessibility for cleaning or repairs offered by the plain cylinder boiler in certain localities, particularly when the feedwater is muddy or deposits a troublesome scale; also its advantages for utilizing the waste heat of furnaces, nor to its construction being a form of strength within certain limitations, and subject to the practical conditions of setting and use we have from time to time pointed out. The experience of this company causes it to regard with some company causes it to regard with some anxiety the use of long boilers. In the plain cylinder type, where the diameter is practically limited to about 42 inches, and rarely exceeds 48 inches, its length must be increased to obtain the necessary heating surface. Lengths of from 40 to 60 feet are common, and one case is reported where the length exceeds 100 feet, and therein lies the

fidence in plain cylinder boilers. Some of these friends have since learned by sad experience their mistake, and that plain cylinder boilers, to be safe, need the most careful attention, even more than some other types. minutes. After watching the leak for a few minutes he became alarmed and reported it to the chief engineer, who reached the boiler killed; possibly he was shutting the stop-valve between that and the other boilers at quality; the iron generally presented a fibrous appearance, though there was some

The rupture was found closed afterward.
The rupture was through the line of rivet holes of the inside lap seam, where it had been observed to be leaking—C D, Fig. 2.
The boiler broke into two parts, as is usual in

contraction which must inevitably ensue be especially destructive to the lap-joints along the boiler bottom? And in this particular boiler, with its overloaded and distressed girth seam, using a homely phrase, was not this the feather that broke the camel's back?

was done, nor what amount of drawing was required to bring the holes of the old and new sheet fair; there are large possibilities here. The strength of a riveted lap-joint sheet fair; there are targe possionates here. The strength of a riveted lap-joint is determined by the perfection in work-manship and material of its several parts, and the injury they suffered we can only conjecture. We do know, however, as a matter of experience, the effect of riveting together a new sheet of greater thickness and rigidity to an older sheet that is lighter and rigidity to an older sheet that is lighterlighter in material, we mean. It is true the difference in thickness between the two sheets in this case was not a great deal, but sufficient, we think, to merit consideration as a factor in the case, and probably explains why a rupture occurred at the third girth seam, because it was weaker and more sus-ceptible to the adverse influences we have described than the fourth, which was nearer the middle of the boiler.

Long boilers, assuming they are properly

adjusted at first, which is not always the case, are exposed to the danger of settling of the piers or supports at the point of suspension, and whatever weaknesses may be developed in the boiler are aggravated by just such treatment as we have described. The feed-water may be heated a few degrees higher, but the plan of filling up the boilers at the time of shift is that generally pursued; at the time of shift is that generally pursued; as a consequence, accidents such as we have described are not of unusual occurrence at iron works at the time of shift or immediately afterward. We have recommended for some years that plain cylinder boilers, like those shown in Figs. 2 and 3, should have two fore-and-aft braces of suitable The boiler broke into two parts, as is usual in such cases, which were projected by the explosion a distance of 500 feet and 300 feet respectively in opposite directions; one of the parts in its flight struck some sharp object, possibly some broken part of the housings of the rolls, and cut out a strip of iron 20 inches long by % inch wide across the grain of the sheet a, Fig. 2. This strip was afterward found curled up like a shaving, and showed that part of the iron was of fair quality; the iron generally presented a ineffectual in such a case; hence when rup-ture occurs there is nothing to hold the boiler together, and it breaks into two parts, which, by the ensuing explosion, are projected in opposite directions with great destruction to everything in their path. The reader will length exceeds 100 feet, and therein lies the danger.

It is not our purpose to excite needless alarm among users of this type of boilers, but the probable cause of the expectation on the probable cause of the expectation of the manner of the expectation of the expec

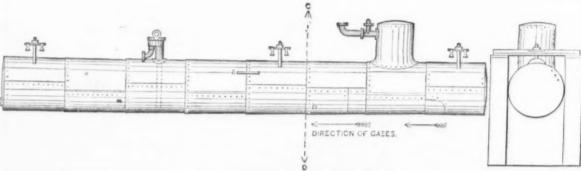


Fig. 2.—A Common Flain Cylinder Rolling Mill Boiler.

we submit in all candor that in boilers of such great length the question of setting is one of the greatest importance. We have devoted some years of study to the solution of this problem under conditions of everyday practice among the thousands of boilers under our supervision. Limited space for-bids the further consideration of this branch of our subject at this time. The exploded boiler illustrated and described in the following sketch will explain many of the dangers and difficulties we have referred to, even under good care and management, such as is

We have walls had settled, assuming that they were he solution of every-attachments forming the middle support had yielded, leaving that part of the boiler withspace for his branch forded by the strength of its material. The available it support transfer to the furness to the heat of temperature of the furnace to the heat of which the boiler is exposed varies considerably at different times, as, for instance, between the time when it is maintaining a heat and afterward when that heat is with-

we submit in all candor that in boilers of plosion. It seems probable, from a study of 4, which, though prepared and used to illus-such great length the question of setting is the circumstances, that the intermediate fire-4, which, though prepared and used to illustrate another explosion varying slightly in details, was alike in principle. That the fore-and-aft braces are a valuable reinforcement to boilers of this description has been demonstrated to our satisfaction and that of our patrons. Yet it would seem that their value should not need a proof.

We would urge again, emphasized by the experience of this and other explosions under somewhat similar circumstances, that

der somewhat similar circumstances, that when a boiler gives signs of distress by unusual leaking at its seams or by other well-known indications, it must at once and with the least possible disturbance be put counsel for the Harrison people that no other final order will ever be entered in the case except "dismissal of the bill without prejudice." Meanwhile the Harrison Steel Co. will proceed to carry out their plans in the erection of their works in Jackson County, III.

American Society of Mechanical Engineers.—The next meeting of the American Society of Mechanical Engineers will be an analytement, such as is commonly found in our rolling mills and blast furnaces throughout the country.

The boiler, Fig. 2, was of the plain cylinder construction, 40 inches in diameter and 30 feet long. The shell was composed of in thickness of iron, single riveted, varying in thickness from 250 to 312 inch. Upon one of the plates appeared the brand of gineers.—The next meeting of the American Society of Mechanical Engineers will be readily seen that these throughout the country.

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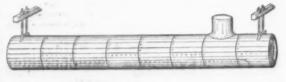


Fig. 3.-The Second Builer Before the Explosion.

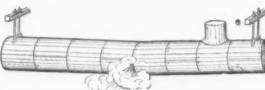


Fig. 4.-Beginning of Rupture.

boiler, and attached to hook bolts and plates at each of the points of suspension by two cross-bars of railroad iron, which extended transversely across the setting and rested on pier walls built up from the side walls, as will appear by reference to Fig. 2. This boiler was one of thirteen in use; it was built in 1872 by a firm having a good local reputation, but it had not been used continuously since that time, the works having lain idle for three years. During last year its working pressure was about 60 pounds; if the day and night shifts.

As soon as the engine extended the draft by opening the various doors in the setting, and prevented the further rise of steam nously since that time, the works having lain idle for three years. During last year its working pressure was about 60 pounds; if working pressure was about 60 pounds; if requent repairs had been made; two patches and a new half-sheet, all on the bottom of the shell, were put on at the time of last repair one year ago; it was last examined and washed out by one of the engineers two days before the explosion; as he reported no defects, it is believed he regarded the boiler as of its inclosing furnace? Would not the states of such a quantity of water at a low temperature of the engineer's attention by a sudden loss of water. This occurred after the engineer's attention by a sudden loss of water. This occurred after the engine last down, in the interval of an hour which elapsed between the day and night shifts.

As soon as the engine er's attention by a clear of entering a powder magazine with a lighted transit between the at a low tent set of reference to feed on this boiler first, he pumped it up to to the tent of the early of the explosion.

The chief factor of England's export trade is her cotton manufactures. The export of cotton manufactures of such a quantity of water at a low temperature of the effect of such a quantity of water at a low temperature of the effect of such a quantity of water at a low temperature of the effect of such a quantity

boiler, and attached to hook bolts and plates sion to attract the engineer's attention by a important element to its destruction, and

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Special Notices. For Sale or Lease.

A Large Two-Story Brick Factory,

A Large Iwo-Story Brick ractory, formerly Macnine Works, at Pearl River, N. Y., on railroad depot, 25 miles from New York City, Railroad faculities unexceptionable, on the line of the New Jersey and New York Railroad. The property contains 40,000 square feet floor space, with one 85 H. P. Engine and Boiler, 700 ft. 2-inch line shafting and pulleys, main belts, steam heating and water pipes throughout the building. A splendid from foundry, 70 ft. by 90 ft., with one iron smelting cupola with Mackenzie blower, brass furnace, core oven, blacksmith shop, pattern vaults, annealing oven, etc. The property can be bought or leased on liboral terms. For further particulars, price, terms, etc., address J. E. B. & Co.,

111 Liberty st., New York City, or Pearl River, Rockland Co., N. Y.

TO MANUFACTURERS. A CRAND BARCAIN.

A Large and Fully-Equipped Machine Shop For Sale.

I will sell at low figures, and at reasonable terms, my magnificent Machine Works at Newark, Ohio, fully equipped with every necessary to make a first-class establishment. It stands on two acres of ground in the center of this thriving city. A railroad switch runs into the works for loading and unloading; excellent railroad facilities; cheap living: unusually healthy locality.

F. J. L. BLANDY.

Zanesville, Ohio,

For Sale.

The largest stock of New and Second-hand Engines, Bollers, and general Machinery in the West. Send for Catalogue. Hoisting Outfits for Coal Mining and other purposes a specialty.

WARREN SPRINGER, 195 to 219 South Canal St., Chicago.

For Sale.

Second-hand

DROPS and LIFTERS. One Engine Lathe, 72 in. x 17 ft. Second-hand

BEECHER & PECK, Lock Box 222, New Haven, Conn.

For Sale.

Heavy Planer, 39 in. x 39 in. x 13 ft., with rack extension, to plane se ft. Good a new.
Sellers & Co. Drilling and Boring Machine, 45 in.
swing, back-goared, self-feed, compound tab.e—table
raises and lowers by power.
Lever Shears to cut 2 x z.

Shears to trim 1/2 plate.
A. G. BROOKS & WINEBRENER.
261 N. 3d St., Philadelphia.

E. BISSELL & CO.,

Wholesale Auctioneers.

FRIDAY, APRIL 27TH, AT 10 O'CLOCK A. M., AT

\$3 Chambers and 65 Reade Sts . N. Y ..

- SPECIAL SALE OF -

TABLE CUTLERY AND CARVERS,

SECONDS.

Comprising about 15,000 dozen Table Knives and Forks, Carvers and Butcher Knives, desirable patterns in Cocoa, Ebony and Bone. Several hundred dozen Silver-plated Tea and Table Spoons and Forks, Extra Plate. Plated Steel Knives, 12 oz. Plate: also Pocket Cutlery, Shears, &c., &c.

J. M. BADGER.

5 Dey St., Room 13, NEW YORK CITY, Dealer in

Iron and Wood Working Machinery. halves, 14 ft. diameter, 24 inches face, 13,000 lbs. Large lists of both new and second-hand goods weight. Wrought-iron hammered shaft, 11 inches for immediate delivery.

235 On May 1, 1883, I shall open a diameter, disk crank. A heavy substantial engine,

NEW MACHINERY DEPOT

at No. 49 Dey st., New York, where I shall be better prepared to serve all who may be in want of anything in my line.

Wanted.

A Partner with \$1000 to \$10,000 in a Foundry and ticulars, inquire of

L. H. COLLER. Poughkeepsie, N. Y.

To Lease.

The Machinery Complete of a Plate and Sheet Mill.

Machinery modern, ready to set up, and in good der. Address THOS. R. McKILLIP, order. Address 130 Dearborn St., Chicago, Ill.

Situation Wanted.

By a young man, responsible position in a good retail hardware house. Ten years' experience. Best references given.

HARDWARE, Address Office of The Iron Age, 220 S. 4th St., Phila, Pa.

Wanted.

An old-established firm in Thames street, manufacturing specially one description of Ornamental Castlings, but having warehouse too large for own use, are desirous to meet with manufacturers of other goods requiring them stocked in London and sold on commission. Apply to 223,70, care of Ironmonger Newspaper, 42 Cannon street, London, England, 43

To a competent Mechanical Engineer, with experience in managing Machine Shops, an interest in the Ornaha Foundry & Machine Co., at Omaha, Neb. The largest and best equipped shops in Nebraska, with a splendid trade and no local competition. Address www. PRICHADDLE

Special Notices.

HENRY I. SNELL,

135 North Third St., Philadelphia, Pa., has just received a fresh lot of Machine Tools. Engines, &c., which he offers at very low figures. One Screw-cutting Engine Lathe, 6 ft. bed 18 in.

swing. One Screw-cutting Engine Lathe, \$ ft. bed, 18 in.

One Screw-cutting Engine Lathe, 12 ft. bed, 18 in. awing. One Screw-cutting Engine Lathe, 19 ft. bed, 24 in.

swing. One Iron Planer, planes 7 ft. long 32 in. wide One Iron Planer, planes 16 ft. long 50 in. wide. One Power Crank Planer, 12 in. stroke. One 11 in. Shaping Machine, traveling head. One 38 in. Upright Drill. Extra heavy. New.

One 300 lb. Ferris & Miles Steam Hammer. One 25 H. P. Corliss Steam Engine.
One 25 H. P. Corliss Steam Engine.
One 40 H. P. Corliss Steam Engine.
One 40 H. P. Palan slide valve Steam Engine.
One 12 H. P. vertical Steam Engine. Naylor.
One 10 H. P. Marine Boller, aultable for tug boat.
One 25 in. heavy Endless Bed Surfacer.
One 5 H. P. Link Motion Boat Engine.
Three Cylinder Bollers, 36 in. dla. x 30 ft. long.
One second-hand No 7 Sturtevant Pressure Blower

For Sale.

Palo Alto Rolling Mills,

Near Pottsville, Pa., ON THE MAIN LINE OF THE POTTSVILLE AND READING RAILROAD.

These mills are in good repair, and can be started in two days' time.
Rolls for T-Rails 12 to 70 lbs. per yard, and for Street Rails 18 to 70 lbs. per yard.
Guide Mill Train for Merchant Iron 3 to 1 inch.
Rolls for Merchant Bar, round and square, up to

Rolls for Marchant Bar, Foundaces in both mills, 4½ inches of Puddling Furnaces, 0; all with boilers attached.
Also Foundry, Machine Shop, Blacksmith Shops, Iron Heuse, Roll House, Carpenter and Pattern Shops, Stables, handsome Dwelling for Superintendent, 11 Tenement House, a Brick Office, and ample grounds for stock and cinder.
For further particulars address

Messrs. LEE & McCAMANT, Extrs.,

Pottsville, Pn. THOS. F. WRIGHT, 1804 Race St., Philadelphia, Pa. HUGH W. ADAMS, 56 Pine St., New York.

Bargains.

One Engine Lathe, 30 in. x 17 ft. 6 in. New Haven. One Engine Lathe, 24 in. x 16 ft. Bement. One Engine Lathe, 24 in. x 15 ft. Bennent.
One Engine Lathe, 25 in x 10 ft. Perkins. New.
One Engine Lathe, 25 in x 10 ft. Perkins. New.
One Engine Lathe, 15 in. x 5 ft. Pond.
One Engine Lathe, 16 in. x 5 ft. Perkins. New.
Cne Engine Lathe, 16 in. x 6 ft. Perkins. New. One American Tool Square Arbor Fox Lathe.

Bolt Cutters, National, capacity up to 1 in. o Bolt Cutters, National, capacity up to 1½ in. Bolt Cutters, National, capacity up to 1½ in. Bolt Cutters, National, capacity up to 2 in. Bolt Cutters, National, capacity up to 2 in. oach . in and . in.

specialists in the in the Address.

Address.

THE NATIONAL MACHINERY CO.,
Tiffin, O.
Catalogues sent free to any address.

For Sale.

One 22x36 right-hand box-bed slide-valve Sta-

tionary Engine, Gardner governor, band wheel in

diameter, disk crank. A heavy substantial engine,

For Sale.

For Sale.

No. 6 Sturtevant Blower and Countershaft. 6 Blake Steam Pumps. Good as new. Nos. 3, 4 and 5 Phila. Hydraulic Works Steam

Pumps. 3, 4 most 2. Tumps. Belt Pump for Hydraulic Press.
Heald & Suco Centrifugal Pump, 4-in. discharge.
Small Steam Blowing Engine.
A. G. BROOKS & WINEBRENER,
261 N. 3d St. Philadelphis.

For Sale.

T. W. T. RICHARDS,

THE LANE & BODLEY CO.,

Cincinnati, Ohio.

For information address

One Planer, 54 x 16. White.
One Planer, 54 x 5. White.
One Planer, 37 x 9. New Haven.
One Planer, 38 x 7. New Haven.
One 36-in. Drill.
One 38-in. Drill. Prentiss. New.
One 10-in. Drill. Prentiss. New. One No. 2 Lincoln Pattern Miller.

Four Hand Lathes. One Pulley Boring Machine. Engines and Boilers, all sizes.

LOVEGROVE & CO., and Chili Bars, £63. 10/ @ £64. 152 N. Third St., Philadelphia. Tin .- The market is a little steadier. We For Sale.

Bolt and Nut Machinery. nd futures £96. 10/ @ £97.

£4. 15/ @ £5, f.o.b. shipping ports.

and Old D. H's, £3. 15/@ £4.

run of the mill, 60/ (a 62/.

£4. 15/@ £5. 10/, f.o.b. shipping ports.

Scrap-Continues in small request and

irregular. We quote Heavy Wrought, c.i.f.

New York, £3. 5/@ £3. 10/. Bessemer Crop

Ends are a little stiffer, and are quoted, for

Tin Plates -The market is weak. We mote: Tin Plates, to x 14, 1st qual. Charcoal .. 22/ @ 23/

each. 3 in. and 4 in. National Bolt Headers, capacity up to 1 in. National Bolt Header, 1½ in. Improved Lewis Bolt Header, capacity up to

Improved Levis 1/4 in. Several Chaplers, light and heavy; Nut sappers, a complete assortment; Cold Headers or Rivets, Store Bolts, &c.; Hot-pressed Nut fachines, 3 sizes; Washer Machinery, and every ariety of tool used in Bolt and Nut Shops. The nly specialists in line in the United States. We quote Common English Pig, £13. 5/@ £13. 10/.

Freights,-Steam from Glasgow to New York, 4/@ 5/, and Liverpool to New York, 2/6; Liverpool to Philadelphia, 7/6 @ 8/ London to New York, 4/@6/.

FINANCIAL.

Office of The Iron Age, Wednesday Evening, April 18, 1883.

by milder weather, easier money, as reflected dorsed bills receivable, 5½ @ 6 %; four stone or iron vases, curbs, posts, in the weekly bank statement, and an immonths' acceptances, 6 @ 6½ %.

Guards are made to apply to any standards are made to apply to any standards are made to apply to any standards. proving foreign demand for grain and other there is still lacking that degree of strength ing as follows: and confidence which it is usual to expect at this season in the general market, and was more distinctly marked one year ago. The The Industrial Works of Shamokin, ewned and successfully curried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large steck of Patterns regarded as part of the projecty. Boller Shop, Blacksmith Shop and Factory for the manufacture of heavy soal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. The works are now run ning, but in a very short time possession can be given. Easy terms of payment are offered to suit a purchaser of limited capital.

Offered for sale by WM. McILVAIN & SONS, Reading, Pa. most depressing feature of the times is the succession of failures among business houses and corporations long held in good repute. Among the latest is that of James Marshall & Co., of Pittsburgh, with liabilities approaching \$1,500,000, or some \$400,000 in excess of the lation in pig iron." Speculation and expansion beyond the limits of ordinary prudence clearing houses of 24 leading cities show an increase of 7 per cent., compared with one week amounted to 32,484 tons, against in 1881. 30,647 tons for the previous week, and a still

Trade Report. to start, but very backward, while the gen- ing the corresponding period last year eral condition is supposed to be 25 per cent. less favorable than it was last year. Westless favorable than it was last year. West Gold. $\$4,9,\infty$ ern trade reports indicate a fair business in Silver. $\$4,9,\infty$. $\$6,9,\infty$ progress. At Cincinnati trade is "improvprogress. At Cincinnati trade is "improving, but still of a conservative character," and at St. Louis, according to the latest The following were the closing quotations

LONDON, WEDNESDAY, April 18, 1883. mail accounts, "commerce is surely in a for mining stocks: healthy and promising condition." Scotch Pig.-The market is quiet and On the Stock Exchange during the week under review the market has been active.

and at times buoyant, but irregular. Transactions have been somewhat in excess of the corresponding week of last year, stimulated by active manipulation, as well as by easier money and more liberal outside orders on account of investors. A feature was the activity in Buffalo and West Shore bonds; Lighterage from Ardrossan to Glasgow is 1/ P also in Reading and Jersey Central, attributable to the statement that the Baltimore Cleveland Pig.-The tone of the market and Ohio Railroad has at last secured the has improved a little, and prices are a little accomplishment of its pet project of building steadier. We quote as follows, f.o.b. shipping a line from Baltimore to Philadelphia, and placed a sterling loan of £2,500,000 upon the the road is to be built. On Thursday Lackawanna and the Vanderbilt properties led in an upward movement. On Friday and Sat-Bessemer Pig.-There is no change to urday there was much irregularity, caused report. The market is quiet and prices steady. We quote W. C. Hematites, in lots by bear raids, in which the Wabashes and Michigan Central suffered most. Union equal portions Nos. 1, 2 and 3, 51/@ 53/. Pacific was also broken down. On Monday Blooms. - The market continues quiet and there was a general somersault, for which steady, with prices unchanged. We quote various reasons were assigned, but it was Bessemer Blooms, 7" x 7", £4. 10/ @ £5, doubtless promoted by parties desirous of buying in at lower prices. On Tues-Manufactured Iron .- The market is quiet day the decline of the previous day was And prices steady. We quote at works:

2 s. d. 2 s. d.

Staff. Ord. Marked Bars... 7 10 0 0

Medium 6 >> 0 0 6 10 0 almost wholly recovered, doubtless through speculative influence. Delaware and Lackawanna was active and buoyant, in prospect of a stock dividend. The statement Steel Rails.—The market is a little 1301/4 @ 1291/4; Northwestern at 1361/4 @ weaker. We quote Ordinary Sections, 135%; Jersey Central at 79% @ 79; St. Paul at 104% @ 103%; Union Pacific at Iron Rails-Dull and nominal. Welsh, 98 1/8 @ 97 1/8; Lake Shore at 113 1/8 @ 112 1/4; New York Central, 1271/8 @ 1271/8; Ontario 30 lb and upward, are quoted, nominally, and Western, 29 @ 28 1/4; Reading at 57 1/8 @ 56%; Omaha at 50% @ 50%; Erie at Old Ralls-Are irregular. We quote Old 381/8 @ 377/6; Denver at 491/2 @ 49; Bur-Tees, c.i.f. New York, £3. 10/ @ £3. 12/6, lington and Quincy, 126, 125 1/8, 126 1/2, 126 1/8

St. Joseph common at 43, 41, 41,4, and preferred at 91 @ 881/4. Foreign exchange was reduced on Monday, the posted rates now standing at \$4.831/2 for 60-day and \$4.86 for sight; the Copper.—The market is not so steady as at last report, and prices are lower. We quote Best Selected, £69. 10/ @ £69. 15/, actions in Europe: "The movements in the New York market will continue to be closely watched for some time, but the exchange quote Straits Ingots, spot, £95. 10/@ £96, between that city and London has moved again in our favor; it is strong at the point now queted, and no further exports of bullion to that quarter are expected for the present. The deficiency in the reserves of the New York banks is likewise diminishing, and the stringency in that quarter is over come. The export of gold from this side Spelter-Is quiet and unchanged. We appears to have a sisted materially in ennuote Ordinary, at shipping ports, £15. 5/@ abling the banks to improve their position, and as far, at all events, as the principal Lead .- The market is quiet at unchanged transactions were concerned, they are now known to have been legitimate business operations. The prices of the leading stocks dealt believed on this side to have reached their lowest level, and some buying is therefore

expected. Money has generally worked easy at 5 @ 6% on call, but on Monday advanced to 7 @ about \$2,500,000-on account of the recent purchase of the Morgan line of steam-

Bid.

S. 5'8 1881, continued at 3½ 103

S. 4½'8, 1891, registered 113½

S. 4½'8, 1891, coupon 113½

S. 48, 1907, registered 119½

S. 48, 1907, registered 119½

S. 48, 1907, coupon 110½

S. 3, per centa 103½

S. Currency 6'8, 1895 127

S. Currency 6'8, 1896 128

S. Currency 6'8, 1897 129

S. Currency 6'8, 1893 130

S. Currency 6'8, 1893 130

S. Currency 6'8, 1893 130

The following is an analysis of the bank total assets-attributed to "extensive specutotals of this week, compared with that of

disaster. As reported by Dun & Co., the business failures of the week number 189, against 197 last week and 182 the week previous. Taking the country at large, outside of New York, there are signs of continued improvement. The aggregate returns from the clearing houses of 24 leading cities show an

The bank return for the week shows an year ago, excepting New York, which loses increase of \$3,411,650 in reserve, which now 25 per cent., despite the increased activity stands at \$289,350 below, against \$4,956,150 the Stock Exchange. The East-bound above at the same time last year, and shipments of freight from Chicago for the \$4,042,625 above at the corresponding date

According to the Custom House reports, larger increase compared with the corrested importations of specie and bullion at this ponding week in 1882, but shippers are holding off in expectation of lower rates on the opening of navigation. Cable accounts are 40,494 in silver, as against a total of claimant for trade, we take pleasure in prefirmer as regards wheat and flour, with more \$6,356 for the week ending April 14 last year.

inquiry for export. Western crop accounts The importations since the 1st of January represent that wheat is everywhere beginning compare as follows with the movement dur-

-Since January \$440,061

entral Ariz nerokee ... hlonega ... urango unkin Gr. East... Green Moun Fold Stripe. Hukill.... 736 rn Silver Hall And ndependence. ron Silver ... adville Con avajo.... ipe Line Cufs. . Belle.... Mexican... Ori. & Mil.. Rising Sun Red Elephant. Sierra Nevada Sierra Grande. Silver Uliff.... 3.75 1.45

GENERAL HARDWARE.

Trade is going on in a satisfactory manner, as far as present business is concerned. The near-by trade has improved noticeably within a day or two, on account, it is supposed. of more favorable weather. No changes in prices of importance have taken place, and, on the whole, the week has been very uneventful.

Nails are nominally \$3.15 per keg for tod. to 6od., but for any desirable order concessions are made, and for a very large order much lower figures would be named. A good regular business is doing, but the market is devoid of any speculative tendency, market dull. The London Economist of the 7th purchases being simply to supply immediate needs.

At the annual meeting of the Board of Directors of the Hardware Board of Trade, held in their rooms, 4 and 6 Warren street, to-day, the following gentlemen were elected officers for the ensuing year, viz.:

President, Ernst Hilger, of the Wiebusch & Hilger Hardware Co., New York. Secretary, Edward H. Cole, of the Eaton,

Cole & Burnham Co., New York.
Treasurer and Actuary, James H. Goldey, 4 and 6 Warren street, New York

Counsel, Frederic G. Dow, 145 Broadway, New York.

A Lawn Mower Guard made by T. & W. H. Coldwell, Newburgh, N. Y., is a novelty in the trade. In the words of the makers, this invention consists of a neat, light and strong galvanized spring-wire Guard, which with on the New York Stock Exchange are covers the knives and forms a complete spring or cushion for the mower to strike against. It does not interfere with cutting the grass. It enables the operator to mow close up to flowers, plants, shrubs, trees, &c., without the slightest danger of cutting or 8 %, caused by paying in the first installment bruising them. It does away with a large amount of trimming usually done with shears or sickle, and protects the mower, and espe-In business circles during the week under ers and its railway connections. Time money cially the knives, from any possibility of review trade has been somewhat quickened grows easier. We quote 60 to 90 days' in-Guards are made to apply to any standard United States bonds generally have been mower. The following is a list of sizes and products. But in its most favorable aspects firm, and in some instances advanced, clos- prices, subject to a discount of 25 per cent: Guard for 12-inch lawn mower.....

> E. Bissell & Co., wholesale auctioneers, announce a large sale of Table Cutlery, &c., to take place on Friday, April 27th inst. See their advertisement among "Special Notices."

E. M. Richardson, Waltham, Mass., maker of Shedd's Steel Spring Wire Blind Fasts, has sent us the following revised prices for these goods:

The American Wire Co., of Cleveland, Ohio, is a new concern which makes its appearance this week among our advertisers on page 12. The officers are : Charles A. Otis, president ; Samuel Andrews, vice-president ; Samuel A. Sague, general manager; Thomas Jopling, treasurer, and John C. Andrews, secretary. With large facilities and ample capital, they are likely to take a prominent position in the market. They introduce themselves to the trade in the following cir-

CLEVELAND, OHIO, April, 1883.

ing secured the services of men of long practical experience, selecting them with especial reference to their known ability and perfect reference to their known ability and perfect knowledge of the Wire business in its every detail in their several departments, we start our business and works with the full benefit of years of thorough training and practical experience, added to the latest and best im-proved machinery and patented appliances, with unexcelled facilities in buildings and location for manufacturing all descriptions of Wire at minimum cost to produce best re-

We know, as regards quality of stock used and the care taken in its manipulation, used and the care taken in its manipulation, that there cannot be a better quality of Wire made than that we offer you; we therefore solicit your patronage with the full assurance that we offer you goods second to none. We shall be pleased to have your orders, which shall have our careful and personal atten-Yours truly,

AMERICAN WIRE CO. William H. Haskell Co., manufacturers of Bolts and Coach Screws, send us the following announcement :

PAWTUCKET, R. I., April 6, 1883. DEAR SIR: We beg leave to call your attention to the fact of our having elected Mr. Daniel A. Hunt to the office of agent of this company. He is well known to many from his long connection with the Providence Tool Co. He will devote his time for the present to calling upon our friends and learning their wants, and we trust to a continuance of the pleasant relations so long existing between us. We shall endeavor to main-tain the high standard of our goods, which have so long been known in the market, and with prompt attention and reasonable prices hope to receive your future orders.

Respectfully yours,

WILLIAM H. HASKELL Co.

On the first of next month the New York office and salesroom of the Yale Lock Mfg. Co. will be removed from No. 53 Chambers street to No. 62 Reade street. In announcing this removal, the company say :

The new premises are located on the north side of the street, a few doors west of Broadside of the street, a few doors west of Broadway, and include a handsome store with fine basements. The former will be devoted to our Lock and Hardware department, and to the display of samples of our various products. The basement, which is well finished and lighted, will afford room for samples of our larger Hoisting Machines, and for carrying a full stock of our heavier lines of goods, from which we will thus be able to fill all orders promptly at sight.

The stock is not very plentiful, but what

orders promptly at sight.

The business of our New York office will continue, as heretofore, in charge of the assistant treasurer of the company, Mr. Thos.

F. Keating, who is prepared to answer all inquiries and to attend to all business as promptly and as fully as from the Stanford. promptly and as fully as from the Stamford office. Our out-of-town customers are cor-dially invited to call upon Mr. Keating when-ever in the city. Special attention is called to the fact that our New York office includes a fitting and repairing department, where we are prepared to replace broken or worn out parts of Locks, and to repair the same, and also to furnish duplicate Keys, or Locks in sets with Keys alike, at short notice, and without the delay of sending to the works.

Our readers will remember that during the winter we have more than once referred to the litigation against Barney & Berry for infringement of patents. They now request us to publish the following announcement to their customers: SPRINGFIELD, MASS., April 17, 1883.

Our attention has been drawn to a circular dated the 7th instant, issued by Peck & Snyder to parties who have purchased of Mr. Robert Gibson, during the past season, the "Automatic" Skate manufactured by us, wherein our customers are requested to report to Peck & Snyder the number of Skates sold by them and the number rowsin. Skates sold by them and the number remaining on hand. Peck & Snyder have had no suit with our former agent, Mr. Gibson, but a suit of Edward Spaeth was commenced against him, charging that the "Automatic" Skate was an infringement of the Charles T.
Day patent for an eccentrically pivoted lever, combined and arranged with the heel and toe clamps.

to have Mr. Gibson, our We are ready to have Mr. Gibson, our former agent for the sale of "Automatic" Skates, account for all Skates which he has sold to our customers, and shall assume, ourselves, the responsibility for such Skates; and after the Master, to whom the case is and after the Master, to whom the case is a few forms of the master, and the master is a country to the master in We are res referred to take an account, has made his report, either pay the small sum which can be allowed as damages, or, if the sum is anything worth disputing about, we shall test the validity of the reissued patent of Day before the Supreme Court of the United States. Meanwhile we request each one of our customers to make no report to Peck & Snyder, as requested in their circular of the 7th instant. The accounting to be made by Mr. Gibson will cover all Skates sold to them, and if any attempt is made to harass any of our customers by suits, we know how to protect them. Dealers having any of the "Automatic" Skates on hand are requested to return them to us, and we will replace them with our New Lever Skate, to be known as the "American Rink." BARNEY & BERRY.

IRON.

American Pig .- The conditions which for some weeks have characterized the market are still the prevailing features. The demand is far below the production, and the ressure of accumulating stocks is increasing. While the companies are nominally keeping up their prices, a good deal of Iron is selling on private terms in a quiet way at conces- jobbing demand at \$4.60 @ \$4.65. sions, and indications are not wanting of a dra Adams in 94 days around Cape Horn, for which \$4.45 was offered in vain, and the market by the failure of James Marshall & Co., while it may not affect this market very Common Lead closes firm, and may reach Lead, heavy

Scotch Pig.-There is little or no change to note in this branch of the trade. The demand is limited and transactions on a small scale, but, importations being in proportion, there is no accumulation of stocks. We quote Eglinton, \$22 from yard; Carnbroe, \$22 from ship; Glengarnock, \$22 @ \$23 from ship and yard; Dalmellington, \$24.75 from ship; Gartsherrie, \$25 from yard; Langloan, \$24.50 from ship.

Bar Iron .- During the past week the market has been irregular and unsettled. There has been a noticeable decline in demand, and buyers are, if possible, more cautious than heretofore. The difficulty pending between manufacturers and labor, and the recent failure of Marsaall & Co., have combined to revive the feeling that prices may yet decline below present figures, which has greatly impaired business, even in small orders, and greatly depressed the prospects of trade in the near future. Prices are feverish, but there is no direct indication that a decline is imminent. Should the proposal of closing the mills become a reality, there is more probability of prices advancing. Some of the mills have stated positively that they will not accept orders for delivery beyond the 1st of June, and are very chary in regard to those for even a shorter time. Prices continue pretty firm within the following quotations From the mills, \$2.10 @ \$2.25 for Refined and \$2 for Common; from store, \$2.40 @ \$2.50 for Refined and \$2.20 @ \$2.30 for Common.

Steel Rails .- We note a general inquiry, but do not hear of any important sales since our last. We quote \$38 at mill for future delivery

Old Rails .- There is nothing of impor tance to report in the way of sales, which have been few and small. We quote, nom-

The stock is not very plentiful, but what they get is being culled and piled up, for which present prices would be entirely unsatisfactory. We continue to quote No. 1 Wrought at \$26 @ \$27, ex-store at \$25.50, ex-ship at \$25, and Crop Ends at \$22 @ \$23.

METALS.

Copper.—Sales for the week sum up 200,-000 lb, and no more. We quote Lake Supe-rior, 154 \$\phi\$ @ 16\$\phi\$, and other brands 14 \$\frac{14}{9}\$. The market has not yet found its level, and is now to a great extent, if not altogether, dependent on that of London. Up to last night there was no change in the market there. This afternoon we are cabled from there to the following effect: "Market not so steady as at last report, and prices lower. Best Selected, £69, 10/@ £69, 15/, and Chili Bars, £63. 10/@ £64." No official change has yet been made in the combination prices of manufacturers. They remain: Bottoms, 31¢ @ 32¢; Braziers, 30¢ @ 36¢; Circles, 33¢ @ 36¢; Sheathing, 28¢, and Bolt Copper, 30¢; Segment Sheets, 33¢; Fire-Box do., 30¢. Considerable shading from these rates is said to be going on, but to what extent it is not easy to ascertain.

Tin.—Our market has relapsed into quite an apathetic condition, so that, with the light dealings going on and the little conlight dealings going on and the little consumptive demand existing, we cannot quote Straits Tin, large lines, any better than 21¢, and L. & F. barely 22¢. Shipments from the Straits settlements to the United States during the first half of April have not exceeded 200 tons, while to England nothing was shipped. Messrs. William I. Russell & Co., 12 Cliff street, New York, made the visible supply on this coast, 14th inst., 3319 To-day we are in receipt from there of the ensuing cable message: "Market a little steadier. Straits Ingot, spot, £95. 10/@ £95. 10/@ £97." Tin Ptates have been steady during the week under review, without any material change in values. We quote large lines, ordinary brands, † box: Charcoal Bright, \$5.87\frac{1}{2}\$ (& \$6.25: do. Ternes. \$2.56. @ \$0.25; do. Ternes, \$5.25 @ \$5.37; Coke Tin, \$5.12½ @ \$5.25, and do. Tern Coke Tin, \$5.12/2 Liverpool is a snaw \$4.871/2 @ \$5.121/2 Liverpool is a snaw easier; cabled last night Coke Tin 15/9 @ easier; cabled last night Coke Tin 25/9 @ To-day we hear from London that the market is weak

Lead. - There has been nothing done during the week but an absolute jobbing trade, the price of Common Domestic running up as high as 45%. The fact is that there is no more low-priced Lead for sale, and this accounts for the rebound, which has not occurred from free buying, and may not occurred from free buying, and may be called rather a negative than a positive advance. At St. Louis, on the other hand, there has been a fair amount of activity, 300 tons Soft selling at \$4.20 @ \$4.25, and 200 300 tons Soft selling at \$4.20 (@\$4.25, and 200 tons Chemical and Common at \$4.10 @ \$4.12\frac{1}{2}, to which a freight of 43\frac{1}{2}\frac{1}{2} would have to be added this way. At the close the market here stands very dull, without wholesale offers at all—in fact with a mere lot went into store; 500 tons more are ex-pected and due every day. The market for

the quality and price of our goods will at all times entitle us to a liberal share of your patronage, which we respectfully solicit. We need only to refer you to the names of the officers of this company as a sufficient guarantee that the quality of our production will be of the very highest standard. Having secured the services of men of long practices and the services of men of long practices. See the services of men of long practices are services of men of long practices. Short Load and the services of men of long practices. Gram: Market quiet at unchanged prices Common English Pig, £13. 5/ @ £13. 15/. Manufactures are quoted as follows: Lead Pipe, 6¼¢; Sheet Lead, 7½¢; Tin-lined Lead Pipe, 15¢ % lb., and Block-tin Pipe 45¢, less the usual discount to dealers.

Spelter and Zinc .- No life has as ye got into the market for Common Domesti Spelter, which remains in an expectant, bu firm, attitude at \$4.75 @ \$4.85; Silesian w nominally quote 51/4 \$6 @ 51/4 \$6. We ar wired from London as follows to-day \$21.50 @ \$22 from ship and yard; Summer-lee, \$24.50 from ship; Coltness, \$24.50 @ \$24.75 from ship; Gartsherrie, \$25 from while Sheet Zinc is moderately activ

Antimony—Has been featureless and devoid of life at 10¢ for Hallett and 11¢ for

FOREIGN TRADE MOVEMENTS.

The following is a summary of foreign trade movements during the past week: IMPORTS.

For the week ended April 13: Since Jan. 1....\$121,634.940 \$149,310,282 \$137,071,315 Included in the imports were articles of nerchandise valued as follows:

	Pkges	. Value.
Antimony.	49	\$2,879
Brass goods	144	13,313
Bronzes		1,129
Chains and anchors	15	561
Clocks	13	1,451
Copper	**	7,678
Cutlery		58,994
Guns		8,491
Hardware	32	580
Iron, hoop, tons	25	812
fron, pig, tons	I,343	36,636
Iron, sheet, tons	14	1,095
Iron ore, tons	370	1,001
Iron cotton ties	2,200	1,848
Iron, other, tons	787	25 991
Lead, pigs	969	3,850
Machinery	393	23,008
Metal goods	366	29,097
Nails	870	659
Needles	20	6,465
Old metal	**	5,095
Ore	52	523
Oxide, zinc	350	3,727
Platina	3	8,232
Platedware	x	5
Plumbago	337	3,270
Percussion caps		2,833
Pins	3	438
Quicksilver	500	13,046
Saddlery	13	1,125
Steel	49.514	95,455
Tin, boxes	18,500	85,892
Tin, 5,686 slabs, 447,088 lbs	**	92,956
Wire	440	2,627
The quantity of various am	tiolog i	mnorted

The quantity of various articles import compares with previous weeks as follows:

For the 15 weeks Same week. of 1883, time 1882

	week.	of 1883.	time 1882.
Cutlery, rkgs	160	, 2,212	2,280
Hardware, pkgs	32	359	340
Iron R. R., bars	****	5,285	44,828
Lead, pigs	969	1,072	9 505
Steel, pkgs	49-514	780,844	559,702
Tin, bxs	18,569	513.597	
Tin slabs, ibs	447,688	6,339,670	3.319,084
EXPOR	TS OF SP	ECIE.	
For the week end	ed Apri	14:	
Total			\$273,053
Previously reported		*******	4,940,334
Total since January 1,	r883		\$5.243,387
Same time in 1882			14,490,253
Same time in x88x			3.739,588
Same time in 1880			3,068,897
Same time in 1879		*******	6,389,648
Same time in 1878			5,420,921
Same time in 1877	********	A.	4,595,894
Same time in 1876		*******	15,229,852
Same time in 1875		*******	21,857,862
Same time in 1874		*******	9.972,898

EXPORTS EXCLUSIVE OF SPECIE. For the week ending April 17:

Since Jan. 1.....\$113,666,375 \$94,184,370 \$106,100,917

COAL.

The Anthracite Coal trade continues in the same dull and featureless condition noted for some time past, and, with full time at the mines through the coming week, prices do not promise an immediate improvement. The producers, however, are expecting a new impulse on the reopening of navigation by canal, May 1st. They express a belief that about all the Coal now brought to tidewater is taken up which would business in progress. Eastern trade remains quiet, with freights

Boston \$1 ; to Providence, 70¢ @ Bituminous is as dull as ever, with quota tions for Cumberland, nominally, \$4.50 @ \$4.60 alongside in New York. The New Central Coal Company has renewed its contracts with the New York Central and Harlem Rail-

The Pottsville Miners' Journal says There is no diminution in the inquiry for Iron, but the prices offered are not such as to induce the Iron men to do more than keep their fires alive. As yet there has been no stoppage, except of such furnaces as were compelled to make repairs, but it will reuire a better business than is at present ofdure a better business than is at present of-fered to keep them going for any consider-erable period. The stoppage of furnaces would, of course, still further depress the Coal demand, and hence the condition of the Iron trade is a matter of some considerable anxiety to Coal operators."

anxiety to Coal operators."

The total product of Anthracite last week was 382,736 tons, against 399,578 tons for the same week of last year, and the product for the year so far is 6,762,031 tons, an increase of 745,642 tons.

The Delaware and Hudson Canal is now

OLD METALS, PAPER STOCK, &c. The purchasing prices offered by dealers

are as follows: Copper, heavy.....

h	Zinc "	.03	0	
	Pewter, No. 1	.14	0	.15
n	Pewter, No. 2	. TO	0	
8-	Wrought Iron P ton.	22.50	0	****
	Light "	12.00	600	13.00
S.	Stove Plate	12.00	@	
27	Machinery do "		@	15.00
d	Grate Bars	4.50	0	
d	Electrotype Plates ? D.	.04	0	.04 1/4
	Stereotype Plates "	.05	60	****
Θ,	Small type "	.05	(0)	.05%
et	The prices current (prices dealers) for Rags, &c., are as			local
ic it	Canvas, Linen	" 35	4C. (0 4 C.
e	White, No. 7			@ 4 % C.
:	Seconds			BI C.
y	Soft Woolens			2 7 C.
	Mixed Rags			2 C.
e	Gunny Bagging			ā
rt	Jute Butta			® 1%c.
e	Kentucky Bagging			2 3 4c.
	Book Stock			2 C.
	Newspapers			ē
	Waste Paper and Scraps			ā
d	Kentucky Bale Rope			£ 4 C.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending April 18, 1888.

	Williamson Jas. & Co.
Hardware.	Pig, tons, 600
	Wood, Niebuhr & Co.
Belcher H. W.	Wire rods, pgs., 2145
	Wire rings, 5'4
Casks, 2	Order.
Anvils, 2	
Barrett —	Pig, tons, 1162
Case, r	Ore, tons, 1179
Barthiel A. E.	Ore, kg., 508,200
Pump, case, r	Bars, 855
Boker, Hermann & Co.	Rail ends, tons, 280
Cutlery, guns and	Cotton ties, bdls.,
hdw., pkgs., 59	1200
Casks, 4	Rail ends, lot
Bloomfield & Co. J. C.	Spiegel for Canada,
Mach'y, case, 1	tons, 511
Curley J. & Bro.	Channel and angle,
Cases, 2	pcs., 373
Davies & Co.	Spiegel, cs., 300
Packages, 10	Spiegel, tons, 20
Degrauw, Aymar & Co.	Wire rods, bdls.,
Chain, cks., 5	28,394
Delamater C. H. & Co.	Wire, coils, 375
Mdse., pkg., 1	Rails, 501
Drexel, Morgan & Co.	Coiled rods, bdls.,
Arms, cs., 8	_ 3557
Cases, 2	Spiegel, cks., 189
Duden & Co.	Railroad bars, 4449
Mach'y, cs., a	Fish plates, 8108
Duval H. R.	
Wheels, 4	Steel.
Field Alfred & Co.	Abbott Jere & Co.
Mdse., cs., 3	Cases, 8o
Cutlery, os., 9	Bar, r
Cask, x	Baring Bros. & Co.
Chain, cks., 2	Rails, tons, 233
Clamar & Ca	Brown Wm.
Garner & Co.	Cases, 8
Mach'y, cs., 3	Progra Prog & Co

Mach'y, cs., 3
Graef Cutlery Co.
Cutlery, cs., 5
Gt. West, Disp. Co.
Guns, cs., 2
Mach'y, Cs., 10
Havemeyer & Edder,
Packages, 5
Hartley & Graham,
Mdse., cs., 3
Jesepthal Bros.
Cases, 10
Johnson John & Co.
Mach'y, pkgs. and
pcs., 47
Kursheedt Mfg. Co.
Packages, 4 Brown Bros. & Co Wire, rings, 2 Beicher H. W. Cases, 15
Bundles, 2
Broomhead, Geo.
Bundles, 87
Carey & Moen,
Wire, bdls., 168
Dana & Co.
Wire rods, bdls., 2630
Dolge A. Dana & Co.
Wire rods, bdls., 2
Dolge A.
Wire, cks., 2
Duval H. R.
Cases, 9
Bars, 20
Bundles, 10
Hermann Theo.
Bars, cs., 3
Mayer, Strouse & Co.
Casks, 15
Moss F. W.
Bundles, 316
Bars, 78
Phelps, Dodge & Co.
Bundles, 15
Bars, 72
Temple & Lockwood,
Cases, 20
Bundles, 104
Wagner W. F.
Cases, 31
Bundles, 308
Bars, 106
Cases, 6
Wells, Fargo & Co. Kursheedt Mfg. Co.
Packages, 4
Lidgerwood Mfg. Co.
Machinery, cs., 30
Mott Iron Works J. L.
Mdse., pkgs., 93
Menock, Robert,
Mach'y, case, 1
Merch, Disp. Co.
Chains, 15
Arms, cs., 5
Moore's Sons J. P.
Arms, cs., 7
Moss F. W.
Files, cks., 7
Mount J. T.
Casky, 2
Cestler W. E.
Machines, cs., 2
Palmer Lowell M.

Bars, 106 Cases, 6 Wells, Fargo & Co. Plates, case, 1 Order, Bars, 15 Bundles, 110 Wire rods, 673 Galv. rods, cks, 40 Bands, 208 Forgings, 34 Packages, 28 Bundles for Canada Hoops, bdls, for Canada, 360

Co.
Tin pits., bxs., 8c97
Antimony, cks., 14
Downing, Sheldon & Co.
Tin plates, bxs., 6o
Hendricks Bros.

Hendricks Bros.
Antimony, cks., 34
Howland & Aspinwali
Old metal, cks., 5
Old metal, case, I
Jex Wm. & Co.
Old metal case, I
Ketchum E. & Co.
Tin plates, bxs., 792
Lamarche's Sons A.
Spelter, irgots, 1439
Rolled zinc, cks., 35
Marval Bros. & Co.
Yellow met., bbls., 2
Yellow met., bbls., 5
Copper, pcs., 7

Yellow met., bolls., 2
Yellow met., bdls., 5
Copper, pcs., 7
Zinc, cask, 1
Meyer G. A. & E.
White zinc, cks., 150
Marzon W. D.
Lead, pigs. 174
Monsante C. M.
Old copper, cask, 1
Yellow metal, cs., 2
Yellow metal, cs., 2
Yellow metal, cs., 2
Yellow metal, cs., 2
Fizer & Co.
Antimony, pkgs., 5
Phelps. Dodge & Co.
Tin plates, bxs., 9522
Black taggers, 380
Autimony, cks., 34
Scoville Mfg. Co.
Mdse., cs., 12
Spadone A.
Met. goods, bxs., 2
Order,
Tin plus, bxs., 20,680

Order, Tin plts, bxs , 20,680 Black taggers, bxs.,

Black taggers, bxs., 159
Tin. ingots, 500
Tin. bolls., 5
Tin sheets, cs., 28
Old copper, cks., 2
Gun caps, cs., 24
Lead, pigs, 1619
Tin slabs, 5031
Zinc oxide, bbls., 255
Terne pits., bxs., 15
Tin, piculs., 419

Oestler W. E.
Machines, ca., 2
Palmer Lowell M.
Nalls, kegs, 20
Putney Daniel,
Gun barrels, cs., 3
Schoverling, Daly &
Gales
Arms, cs., 9
Mdse., case, r
Seed J. H.
Mach'y, cs., 4
Squires, H. C.
Guns, cs., 5
Struller, Lau & Co.
Case, r
Taylor, Thos.
Casea, S
Vom Cleff & Co.
Arms, cs., 2 Motals. Arms, cs., z Ironware, cs., z Ironware, cs., z₇ Wiebusch, Hilger & Co Hdw., anvils and cutlery, pkgs., 6₃ Witte John G. & Bro. Cutlery, cs., 3 Young Wm. H. Case, 1

Nails for Canada, Iron.

C8., 80

Anglo-Am. Roofing Co Angio-Am. Rooning Co.
Sheets, cs., 123
Cases, 179
Baring Bros. & Co.
Wire rds, colls, 18, 145
Blakely & Walbaum,
Pig, tons, 30
Bruckner, Evans & Co.
Wire netting rolls,
389

Carey & Moen, Coiled rods, bdls. 449 Colled rods, Dolls. 44 Crocker Bros. Pig. tons. 500 Spiegel, tons. 172 Coddington T. B. & Co. Sheets, bdls., 420 Slieets, bxs., 126 Duval H. R. val H. R. Bundles, 3 Cases, 4 Wire rope, coil, 1 Oxide, cks., 70 rnshaw E. Ore, tons, 69

Wire, cs., 2
Hammacher & Co.
Wire, cask, 1
Iron Clad Mfg. Co.
Cases, 135
Bundles, 85
Lalance & Grosjean,
Sheets, bdls., 103
Lee Jas. & Co.
Pig. tons, 200
Lundberg Gust.
Coils, 4
Bars, 2897 Bars, 2897
Merch. Disp. Co.
Oxide, cask, 1
Montgomery & Co.
Wire, cks, 9
Naylor, Benzon & Co. Naylor, Benzon & C Bars, 9006 Bundles, 286 Prosser T. & Sons, Tubes, bdls., 17 Wells, Fargo & Co. Bars, 186

EXPORTS

		EXP	ORT	13			
	Of Hardware,	Iron	, Ma	ichi	nery	, м	etals
	&c., from the						
1	week ending						
		****		-			
	Danish West In Quan.	Wal.	Scal	es. T	okos (uan	. Val
1	Differ on Quan.	\$94				506	9,98
	Rifles, cs 2 Mach'y, pkgs. 5	119					9
1	Hdw., pkgs 33	22.3	Barr	rows	pkgs.	21	71
1	Scales cs 7	51	Tacl	cs. c	ase	4	
1	Cutlery, cs 3 Steam pump. 1 Cartridgscse 1	550	St.	Pi	erre	CM	ique.
1	Cartridgscse 1	20	-		lon.	1	.Amc.
1	Mf.iron, pkgs. 7 Pumps, cse 1	87	Ptlm	1 0	als	,	
1	Saws, cs 2						5
1	Saws, cs	36	Mf.	iron.	pkge	1	
1	Nails, kegs 12	50			Cube	w.	
1			Hdw	7., pl	kgs	49	958
1	Hamburg.		Ptlm	1., g	als.20	,850	18,833 43
1	I. pipe, pcs 363	6,038	Agri	mp.	, pkgs	110	43.
1	Ag. imppkgs 963 Nic. ore, bbis. 24 Hdw., pkgs 43 Wringers, cs 12 Copper, cks 55 Blower	21,291	Scal	es, (pkgs.	120	4,95
١	Hdw., pkgs 43	2,498	Pum	ıps,	pkgs.	7	221
1	Wringers, cs., 12	216	Scal	es		7	176
1	Copper, ckg 55	9,240	Nail	s. pl	CO'S	210	25
ı	Mf. iron, pkge	30	Iron	safe	cgs	7	377
1	Knit, ma., cs. 14	1,950		dmil	ls	2	177
ı	Mach'y, pkgs. 3	SIL	Macl	lron	, pkgs	134	2,571
1	Knit. ma., cs. 14 Mach'y, pkgs. 3 Arms, cs 3 Clocks, pkgs. 11 Sew. ma., cs166	1,705	Iron	h'pe	bdia	502	2,571 5,631 1,100
1	Sew. ma., cs., 1166	15.813	Cutl	erv,	C8	3	45
1	Ptlm., gals.456,807	36,793					82
1	Bremen.		Zinc	Ce.		50	
1	Mach'y, pkgs. 22	3,200	Cloc	ks, I	kgs.	3	138
1		4,955	Fre	nch	Wes	t In	dies.
1	Mf. iron, pkgs. 17 Pg. prss's., cs. 13 Ptlm. gals.385,000 Metal, case 1	454	Ag.	imp.	.pkgs		117
١	Ptlm. gala. 285,000	32,800	Ptlm	ı., ge	pkgs	2000	225
1	Metal, case 1	287	Ce	nere	al Az	ner	ioa:
ì			Mf. i	ron,	pkgs	28	208
l	Sew. ma., cs., 50 Wringers, cs. 3	1,200	Cart	ridge	88. CS.	2	126
1	Dutch East In		Sew. Hdw	ma.	., CS	8	
ı	Ptlm., gals.370,500		P. dr	iver	gs pkgs gs ls	8	89
l	Christiania		Nails	, ke	gs	29	215
l	Hdw., pkgs 16	170	Ptlm	118.88		1	85
1	Wringers, cs. 3	58	Pisto	ls.	ase	257	131
1	Elsinore.		Cutle	ery,	C8	18	336
ı	Ptlm., gals.197.974	16,007	Arm	s, cs	h'ng,	18 16	336 632
ı	London.	1-97	cas	iet. s	n ng,	r	58
l	Mach'y nkow so	v. v86		1	Brazi		20
1	Mach'y, pkgs. 20 Copper, cks 40	7,500	Sow	ma	00		
1	Ag. imppkgs 353	11,067	Ptlm	. Ra	ls02	750	600
1	Por cong on	160	Cutle	ry,	pkgs.	72	4,402
1	Springs, cs a	360	Rigo	es, p	kgs	23	479 688
1	Pumps, pkgs. 10	530	Iron	safe		4	
1	Light. rods, cs 8	270	Tack	S. AS		39	325
ı	Clocks, pkgs. 500	7,102	Car v			100	405
ı	Hdw., pkgs 270	0.108	Hdw	whee	els	260	2,600
	Rifles, cs 24	5,990	Shoe	nail	gs s, cs. s, cs.	401	3,902
ŀ	Scales, cs 59	823	Cott'	n gir	18,CS.	3	134
l	Pum., gais. 375,000	31,900	Mach	'y, 1	pkgs.	50	134
١.	Copennagen		Mf. in	ne	nlega	1	2,012
١.	Hdw., pkgs 7	384	Nails				2,130
	Ag, imp, pkgs 14	700	Pump	ps, I	s kgs.	8	392
ľ	Hull.	-	Ag is	, pk	28	17	415
1	Shd. rollers.cs 6	154	Saws	, cas	pkgs e	28	415 583 148
ľ	Mach'y, pkgs. 20 Copper, cks. 40 Ag. imp., pkgs 353 Saws, cs. 2 Per. caps, cs. 2 Fyrmps, pkgs. 5 Light, rods, cs. 8 Clocks, pkgs. 50 Sew ma., cs. 75 Hdw., pkgs. 27 Cipcenhayen Hdw., pkgs. 27 Cipcenhayen Hdw., pkgs. 24 Ag. imp, pkgs. 14 Hull. Shd. rollers, cs. 6 Fumps, pkgs. 6 Hdw., pkgs. 8 6 Hdw., pkgs. 8 6	350	Saws	idge	8, C8	5	85
	Hdw., pkgs 80	2,784	Need	les,	case.	X	17
1	Mr. imp.,pkgs 245	V. 5875		1	Hayt		
1	Clocks, cs 2	128	Ptlm.	, ga	ls8	54I	994
	Mach'y, pkgs. 3	132	Ag	ry, c	8	6	105
	Shd. rollers, cs 6 Pumps, pkgs. 6 Hdw., pkgs 8 Ag. imp., pkgs 245 Mf. ircz, pkgs 49 Clocks, cs 2 Mach'y, pkgs 3 Liverpool.		Nails	ker	pkgs	14	225 35
			Hdw.	, pk	gs	14	
1	Hdw., pkgs 132 Furb. wheel 1	3,307	TREE	s, ca	Ser.	X.	28
ľ	lurb. wheel I	IOO	Sew.	ша.,	CS	37	350

37 Lisbon. Genoa. Hdw., cs. . . . 24 250 Sew. ma., cs. 84 1.457 Venice. Glasgow. Clocks, pkgs.. 18 Ag.imp., pkgs 47 1,961 Mr iron,pkgs. 6 140 Wsh. ma., cs. 12 96 Hdw., pkgs. 37 1,023 Mach'y, pkgs. 0 1,458 Mexico.

Mach'y, pkgs. 244
Mf. iron, pkgs. 35
Clocks, pkgs. 25
Clocks, pkgs. 25
Clocks, pkgs. 25
Clocks, pkgs. 26
Revolvers, cs. 3
Scales, cs. 5
Agr. imp., pkgs 40
L tubes, bdis. 48
Saws, case. 1
Engineer's instrum'ts, cse
Castors, case. 1
Bells, case. 1
Per, caps, cse. 1
Oil tank. 1
Zinc, roils. 2
Ptim., gals. 31,600
Sew. ma., 05. 122
Sew. ma., 05. 122 6,556 Mach'y, pkgs. 0 1 Amsterdam. Hdw., pkgs. 55 1 Sew. ma., cs. 67 2 Axles & wh'ls 4 Ag. imp.,pkgs 29 Clocks, pkgs. 21 Mach'y, pkgs. 3 1,504 2,188 28 527 546 210 Antwerp. Mach'y, pkgs. 14 Nails, bxs.... 3 722 94 Bristol. Ag. imp.,pkgs 450 9,000 Ptm., gals..265,230 23,400 Queenstown.

Wheels and a.
Steel, cs....
Hdw., pkgs...
Cutlery, cs...
Nails, pkgs...
Cartridges, cs...
Mf. cop., case...
Pumps, pkgs...
Pistols, case...
Locomotive...
Spikes, kegs... Ptlm. gals 246,840 19,995 Gibraltar. Ptlm., gals....8750 1,250 Pumps, hbds. 10 603 Malta. Guns, case.... 1 Clocks, pkgs. 150 Marseilles. Ag. imp.,pkgs 238 5,499 Hdw., cs..... 2 136 Iron drums... 106 1,200 Mach'y, pkgs. 2 591 Clocks, pkgs. 3 261 Havre.

Ag.imp.,pkgs.1005 Copper, casks 136 Sew ma., cs.. 51 Mach'y, pkgs. 3 Ptim., gals., 50,000 4,6
Newfoundland, Sew. ma., cs.. 4 30 Mf. iron, pkg s 10 179 Clocks, pkg s.. 9 54 Oil tanks.... 2 42 Bordeaux. Sew. ma., cs. 232 4,214 Mach'y, pkgs. 208 8,300 Naph., gals.73,464 5,601 Ptim., gals.151,111 11,144 Nova Scotia. United States of Co-

Tarragena.

24 United States of lombia.
26 Sew. ma., cs. . 176 Hdw., pkgs. . 203 138 M fron, pkgs 537 Mach'y, pkgs. . 60 Shot, pkgs. . . 60 Y. mei, shi'g, cs. . . 2 Mf. iron, pkgs 5 Clocks, cs... 4 Hdw., case... 1 Pins case... 1 Ptlm., gals... 2500 Ag. imp., pkgs 20 Tin, pigs... 39 Hong Kong. Ptlm., gals. 390,000 40,950 British Guiana. Mf. iron, pkgs 10 97 Sew. ma., cs.. 6 235 Hdw., pkgs... 21 390 Springs, cs... 1 25 British West Indies. Mf. iron, pkgs 52 5co Ag, imp.,pkgs 10 81 Ptlm., gals., 50,126 6,009 Nails, cs. . . 4 80 Sew. ma., cs. 18 397 Iron safe. . . 1 73 Cartridges, cs.
Scales, cs.
Saws, gs.
Guns, cs.
Revolvers, cs.
Copper, case.
Buckles, case.
Lead, pkgs.
Steel cs. Cider mill.... locks, es.... Clocks, es... 4
Saws, cs... 2
Hdw., pkgs... 93
Mach y, pkgs. 4
Cutlery, cs... 2
Tinplate, bxs. 550
Nails, kegs... 90
Spikes, kegs... 90
Spikes, kegs... 9
Tacks, cs... 2
Guns, case... 1
Pumme, pkgs... 1 Ag. imp.,pkgs 37 fron safes.... 2

Clocks, pkgs... Y. metal, cs.. Pumps, pkgs. Chains, pkgs... Springs, bdls.. Rivets, kegs... British Possessions in Africa.

New Brunswick. Stmpdwre, cs 2 50 Ptlm., gals..ze,100 1,100 Mch'y, case.. 1 150

The m Flange Stru very ac maintai the mill vork ar of better tations a 18. 3.20 Sheet the indic are very both par been ente appear to reached l are quote Common S Common S Common S Best Reigh Best Bloom Best Bloom Common R Blue Annes Best Bloom Second qua Wrough oved sor but the ma week ag ated. P

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PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, April 17, 1883.

Pig Iron.—The market has been dull and Pig Iron.—The market has been dull and heavy during the week, and although prices are nominally unchanged, buyers find the tendency in their favor. This crops out more particularly when there seems to be a chance of a large order, and in such cases, prices 50 cents to a dollar below the general market are frequently reported. In fact, the prominent feature in the trade at the moment is superabundance. It makes very little matter how much or how little a buyer may require, sellers are anxious to double the require, sellers are anxious to double the quantity, and although the volume of busiquantity, and although the volume of business is by no means insignificant, the feeling could hardly be duller than it now is. Too much Pig Iron is the great difficulty, and until that is adjusted prices cannot be other than weak and unsatisfactory. Furnace proprietors recognize this, but they are not quite so unanimous in regard to who should continue and who should "blow out." The problem has to be solved, however, and if it is going to be a question of survival of the fittest. it to be a question of survival of the fittest, it may be months before the market settles down to firm quotations. At the moment the outlook is most discouraging, and, so far as can be seen, there is nothing in the immediate future to warrant any prediction of improve-ment. Sales during the week have been made on the following basis for furnace deliveries: No. I Foundry, \$22 @ \$23.50; No. 2 Foundry, \$20 @ \$21; Gray Forge, \$18.50 @ @ 21. Market feverish, irregular and un-

Bessemer Pig.—There is some little movement among consumers and a probabil-ity that business will be closed within a few days. Sellers quote \$22 somewhat firmly with \$21 @ 21.50 bid.

Spiegeleisen .- There are several inare several inquiries on the market, but the higher prices asked seem to check business. Sales were made a few days ago at a trifle over \$32.50, but \$33 is the usual asking rate for 20 %.

Muck Bars .- There is more inquiry, and a considerable business is being done at \$35 @ \$35.50 at mill. Sellers are firm at the above

Blooms,-Market quiet and easy, but HIOOMS.—Market quiet and easy, but without change in quotations, which are as follows: Charcoal Blooms, \$63 @ \$65; Runout Anthracite, \$55 @ \$57; Scrap Blooms, \$48 @ \$50; Northern Ore Blooms, \$45 @

S47.50.

Bar Iron.—The market continues in much the same condition as heretofore reported, viz., dull, weak and irregular. The usual monthly meeting of the Philadelphia ironmasters was held yesterday, but no change was made in the card rate. Labor will therefore be paid on the basis of 2.3¢, which is also the nominal selling rate, although very little business can be done at that price. Sales are reported at rates varying all the way from 2.15¢ to 2.25¢, but 2.2¢! @ 2.25¢ is probably nearer the market than any other quotations. Anything below 2.2¢ any other quotations. Anything below 2.2¢ is not supposed to be up to the standard of Refined Iron, while only very small lots can be sold at over 2.25¢. The past week has not developed any material change in the position—certainly it has not been improved. There have been a few orders for specialties, but, on the whole, the market is slow and prices very unsatisfactory.

Plate and Tank Iron. There has been

Plate and Tank Iron,-There has been more activity during the past week, and several orders which have been held in abeyance have at last been placed. Prices have been very low, however, including Boat Plate at 2.35¢, and Tank Iron at 2.4¢, but the lots were of some importance, say 1000 tons of the former and 300 or 400 of the last named. In the usual course of business, manunfacturers ask a tenth to three-twentieths more money, but when a good-sized order can be offered, buyers are reasonably certain to get concessions of more or less importance. The mills have improved their position during the week, however, so that prices are comparatively firm at 2.4¢ @ 2.5¢ for Boat Plate; Tank Iron and Bridge Plate, 3.3¢ @ 3.4¢ for Shell Iron and 4.25¢ @ 4.5¢ for Flange Iron, with a fair demand. Flange Iron, with a fair demand.

Structural Iron.—The market is not very active, although a few good sized orders have been placed. Prices have not been maintained, however, and although Angles are quoted at 2.5¢, orders have been taken at concessions of a tenth or more. Some of the mills are comfortably situated as regards work and others are slack; hence the chance better prices is not very encouraging. Quo tations are about as follows: Angles, 2.5¢; T's, 3.2¢; Beams and Channels, 3.5¢.

Sheet Iron.-There is more inquiry, and the indications of business near at hand are gradually improving. Buyers' ideas of prices are very low, however, and it is difficult to adjust values on a basis to meet the views of both parties. Some pretty large orders have been entered, however, and manufacturers appear to be of the opinion that prices have reached bottom for the present. Small lots are quoted about as follows: on Sheets, No. of ...

COMMENSATION CONTRACTOR AND CONTRACTOR CONTR
Common Sheets, Nos. 26 and 274 26
Common Sheets, No. 22 to 25 ¢
Common Sheets, No. 16 to 2134¢
Best Refined, % advance on the above.
Best Bloom Sheets, No. 26 to 28
Best Bloom Sheets, No. 22 to 25
Best Bloom Sheets, No. 16 to 21
Common Red Plates, 3-16 to 16
Blue Annealed, 3-16 to 16
Best Bloom, Galvanized, discount
Second quality, discount50 %

Wrought Iron Pipe.-Business has imroved somewhat during the past few days, ut the market is far from active. There is said to be more inquiry in the market than a week ago and a fair business is anticieated. Prices, however, are unimproved. We repeat last week's quotations, viz.: Boiler Tubes 60% and Gas and Steam Pipe about 70 % discount. On desirable specifica-

Steel Rails.-There has been more busiss doing, especially at Western mills, but ere is no improvement in prices. Sales to the extent of about 30,000 tons have been made at prices varying from \$38 to \$39 at

weight and pattern of Rail. Street Rails are in active demand, with sales of nearly 1000 tous at \$46, New York delivery.

possible to get prices up. Discounts on Gas and Steam Pipe, 70 and 5 % @ 70 and 10 %; on Boiler Tubes, 55 % @ 57½ % off.

Crop Ends .- There is more demand, and buyers can easily be found at \$22, Atlantic ports, but sellers are very firm at \$22.25 @ \$22.50, according to delivery. Latest transactions were at \$22.25; market firm.

Old Rails,-A sale of several hundred tons was made to-day at \$23.50 on wharf, Baltimore, with further inquiries at about same figures. Holders are firm at \$23.50 @ \$24 for T's, and \$27.50 @ \$28 for Double Heads, with prospects of greater activity than there has been for some time. Spot lots T's would command \$25 in small quantities

Scrap Iron.-There is a fair demand, but Scrap fron.—There is a fair demand, but prices are fairly maintained. Sales have been made at \$26 @ \$27 for selected yard lots, and \$25 @ \$25.50 for foreign, but buyers are very careful in selections.

Nails-Continue in fair request, but prices are weak at \$3.15 % keg in an ordinary

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, EPITTSBURGH, PA., April 17, 1881.

The Iron situation has not improved since the date of our last report; on the contrary, the outlook is not as bright as it was a week ago. About the only encouraging feature to note is the more seasonable weather, which has revived the growing crops, and the prospect for a good harvest is more promising. But little progress has been made toward bringing about a settlement of the vexed labor question. Conference committees of the Iron manufacturers and the Amalgamated Association had a protracted session on Saturday with closed doors, but it is known that nothing was effected. The manufac-turers will insist on a reduction of the sliding scale to 2¢, which, of course, for a time will be opposed by the Amalgamated Association. Apprehensions of a strike are entertained, but it is to be hoped that wise counsels will prevail, as a strike in the present condition of affairs would be a calamity here in Pitts-burgh. As it is, with the mills all in operaburgh. As it is, with the mills all in opera-tion, general business is dull; there are a great many people out of employment, and with the mills shut down and thousands of people thereby deprived of obtaining the ordinary means of subsistence, the effect could not be otherwise than disastrous. The assignment of the well-known foundry from of Layers Marchall & Co. whose liabili-

firm of James Marshall & Co., whose liabili-ties are large—variously estimated at from \$500,000 up to \$1,500,000—while not altogether unexpected, is having a most depressing effect, by unsettling confidence, and it is feared that this failure may be followed by others. The Iron trade of Pittsburgh never, perhaps, was in a more healthy condition financially, but there are always some weak firms who, in a time like the present, are pretty sure to go under.

Ore.—This important interest continues in a very unsettled condition, and there is not much prospect of any immediate improvenot much prospect of any immediate improve-ment. Representatives are here almost daily from the Lake Superior Ore region, very anxious to contract, but furnacemen are still refusing to buy beyond their imme-diate actual wants. Prices are weak, and it is expected will go still lower, although some companies say that rather than make any further conversions they will stop mining further concessions they will stop mining. It is expected that Pittsburgh furnaces will be enabled within the next year or two to draw the most of their supplies from new Ore fields much nearer home.

Pig Iron. — The depression noted a couple of weeks past continues; the demand, instead of improving, as hoped for and expected, is falling off, and prices continue weak. Consumers, owing to the probability of a further decline, and the unsettled state of the labor question, are refusing to anticipate future wants. Moreover, it is claimed that Marshall & Co., whose failure is noted above, hold some 50,000 tons on speculation, the great proportion of which is in posses-sion of the banks as collateral, and fears are entertained that a good deal of this Iron will be thrown upon the market and sold to the highest bidder. It looks at present as if a good many of the furnaces in operation would be compelled to blow out as soon as they have got through with existing con-tracts. We quote as follows:

27.			Borren.	James												0			
			oun	ury			0	0.1	 -		0	0	0		\$22,00				
No.	8		0.0							۰	×				20,00	60	21,00,	4	0.0
No.			44							0					18.50	@	19.50,	4	6.6
Gra	v.	F	orge	Ne	u	64	'n	úĬ.					۰	۰	18.50	0	10 50,	4	6.6
			For														21.00,		64
Bess	ie	EX	er li	on.											82,50	60		4	0.6
Cold	1-1	RI	aut (Cha	w	res	34	al							20.00	6	25.00	4	4.0

Muck Bar .- There has been some inquiry during the past week, and no sellers to be found at our inside quotation of last week, although the last sale reported was at the although the last sale reported was at the price in question—\$33.50, cash, at mill. We now quote at \$34 @ \$35, cash, at mill, and the inside quotation appears to be bottom for a good, strong Neutral mixture.

Manufactured Iron.-Trade continues Manufactured fron.—Trade continues very unsettled and unsatisfactory. The demand is light—considerably short of what it usually is at this time, and prices are unremunerative. Large buyers are still holding back, or buying only as immediate necessities require, in anticipation of still lower prices, and about the only encouraging feature to note is that stocks in hands of obbers and consumers are unusually light. Prices are still quoted on a basis of 1.90¢ ¢, 60 days, for Merchant Bars, with usual ount of 2 % for cash.

Nalls,-There is a fair degree of activity business is all that can be expected, although the demand is mainly for small lots. Large buyers still have an idea that prices will be lower; hence they are buying sparingly, but makers report that for the time they have all they can do. Prices remain about as quoted in last report—\$3.10 @ \$3.15, in a jobbing way, and \$3, net cash, for carload lots and upward. The card remains unchanged, but, as noted, selling prices are considerably below the card. onsiderably below the card.

Tarying from \$40 to \$43 at mill, according to well supplied with orders, but it appears im-

Old Rails.-It is rumored that sales of American T's have been made during the past week as low as \$25.50, but brokers who make a specialty of the same inform us that they cannot put them here from any point under \$26—that is, for immediate delivery and we continue to quote the latter as the ruling price.

Steel Rails .- Heavy Sections are quotable at \$39 @ \$39.50, and \$40, cash, at mill, for near-by delivery, and 50¢ @ \$1 \$1 ton less for late summer or fall delivery. Mills here have no complaint to make, so far as orders are concerned, but they say that prices leave very little profit.

Railway Track Supplies.—There is a fair degree of activity at unchanged prices. Spikes, 2.60¢, 30 days; Splice Bars, 2¢; Track Bolts, 3.25¢ with Square and 3.35¢ @ 3.40¢ with Hexagon Nuts.

Crop Ends.—No sales reported during the past week, in the absence of which we continue to quote at \$25 @ \$25.50 P gross ton The last sale of Bloom Ends was at \$25.

Steel .- The Merchant Steel trade continues backward for the season, with no change in list prices. There is always more or less cutting.

Scrap.—The dullness noted for some time past continues, and there is so little doing that it difficult to give reliable quotations. No. I Wrought is quoted at \$24 @ \$25 } net ton for Ordinary, and \$26 @ \$27 for Selected; Wrought Turnings, \$17 @ \$19; Old Car Wheels, \$22 @ \$22.50, gross; Car Axles, \$33 @ \$35, net ton; Cast Borings, \$13 @ \$14, gross.

Coke.-Business continues slow, in sympathy with the depression in the Iron trade. with but little prospect of any immediate improvement. The Pennsylvania Railroad improvement. The Pennsylvania Railroad has reduced freight on Coke 17¢ 😲 ton, all of which will go to the consumer, as makers have made no change in price-\$1.05 ? ton, free on cars at ovens.

Window Glass.—This important Pitts- more; burgh interest continues in a very unsatis-factory condition, but hopes of a change soon for the better are entertained.

CHICAGO.

Office of The Iron Age, 36 and 38 Clark St., cor. Lake, CHICAGO, April 16, 1883. Hardware,—Trade in both Shelf and Heavy Hardware during the past week has been good, and the present week opens with the prospect of still further improvement, with quotations remaining firm.

Nails.-The demand for Nails has been sod. Some few sizes are reported somewhat scarce; orders are, however, being filled without any great difficulty. We quote rod. to 6od., \$3.30 @ \$3.40 % keg, with the usual discount off for cash. These quotations are, however, shaded in many instances.

Manufactured Iron.-The demand for Merchant Iron continues as previously re-ported (good), while quotations on Common Bar, as on Nails, are being shaded below those Bar, as on Nails, are being shaded below those given, and which are as follows: Bar Iron, 2.30¢ @ 2.40¢ rates; Angle Iron, 3.10¢ @ 3.30¢ rates; T Iron, 4¢ rates; Beams, 3.80¢; Channels, 3¢; Tank Iron, 3¢ @ 3.20¢ rates; Sheet Iron, 3.20¢ @ 3.40¢ rates; Norway Channels, 3%, 1 and 101, 3% 3.30% acces, Sheet Iron, 3.20% @ 3.40% rates; Norway Original Bars, 4½% rates; Norway Re-rolled Bars, 5½% rates; Ulster, 4½% rates; Low Moor Iron, 8¢ rates; Nuts and Washers, 8% off list; Wrought Boat Spikes, 3¼% rates. Otherwise we have no change to note.

Pig Iron.—As reported in our last, the market had a quiet tendency, but it is now reported as being actually dull, the supposition being that consumers are at present pretty well stocked up, or, as a prominent dealer stated, find themselves with but few orders on hand and few new ones being entered on their books. We have no change to note in prices and quote as follows: Lake Superior Charcoal, for Nos. 1 and 2, \$24; No. 3, \$25, and Nos. 4, 5 and 6, \$25, 4 mos.; Briar Hill, \$25; Silvery Soft, \$23 @ \$24; Crane No. 1, \$27.50; No. 2, \$26.50; Himrod, \$24; Thomas, \$27.50 (\$\) \$28 (\$\) American Scotch, \$24 (\$\) \$25 (\$\) Du Val, No. 1, \$24 (\$\) No. 2, \$23 (\$\) Fulton Notch, No. 2, \$22.50 (\$\) No. 3, \$21.50. Southern Coke, \$24.25. Calumet, \$23 (@\) \$23.50, 4 mos., and Imported Scotch, \$31.

Hammer, 2 inches and under, 8¢; over 2 inches, 9¢; Cast Spring, 6¢, and O. H. Spring, Tire and Sleigh Shoe, 5¢; Sheet, first, second and third quality, 12¢, 10½¢ and 8½¢ respectively; Crucible Plow, 6¢; Eagle Plow, 5¢; Iron Center Plow, 9¾¢, and Soft Steel Center Plow, 9¾¢; Cast Plow, 5¢; German Plow, 4½¢.

Serap Iron.-The movement in Scrap Iron still continues slight, with a dull market. The following are the purchasing prices paid dealers : No. 1 Railroad Wrought Scrap by dealers: No. I Rairoad Wrought Scrap, Prot ton, \$21; No. I Country Wrought Scrap, Prot ton, \$19; No. I Cast Scrap, Proton, \$17; No. I Stove Plate Scrap, Proton, \$11; Machine Shop Wrought Turnings, ? ton, \$10; Cast Iron Borings, \$7; Old Plows and Plow Steel, \$13.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sta., CHATTANOGGA, April 16, 1883.

The extremely warm weather of the past week has conduced more to development of vegetation than it has to stimulate energy in trade and production. General business continues on the same rather slow gait it assumed early in the year. There is some slight improvement perceptible in builders' materials, but no other articles show any difference for better or worse.

Pig Iron —There is nothing in the mar-ket beyond the old story of slow and cautious movement. Buyers still confine their made at prices varying from \$38 to \$39 at mill, the latter being a pretty firm quotation for summer deliveries. For later deliveries can be shaded, but there is no great satisfactory; the complaint is not so much a lack of business as unremunerative prices.

Wrought Iron Pipe. — Manufacturers holders of low grades selling at what they can get. We quote: No. 1 Foundry, \$22 @ \$21; Gray Forge, \$23; No. 2 Foundry, \$22 @ \$21; Gray Forge, \$23; No. 2 Foundry, \$20 @ \$21; Gray Forge, \$18 @ \$19; White and Mottled, \$16 @ \$18; purchases to immediate wants. Quotations are difficult if accuracy is desirable, many \$23; No. 2 Foundry, \$20@ \$2 \$18@ \$19; White and Mott Car-wheel Metal, \$28@ \$30.

very slow. We hear of a lot being placed at \$23. We quote Wrought Scrap, \$18 @ \$22; Cast Scrap, \$11 @ \$14; Old Wheels, nominal, \$24.

Nails.-We quote at \$3.30, and not particularly active.

Manufactured Iron.-We quote Bar at \$2.20, carload lots. Mills are running very slow. Railroad Spikes, \$3.20; Track Bolts, \$3.75; Fish Plate, \$2.50.

Coal.-We quote: Fancy Lump, \$3; Common, \$3 @ \$2.50; run of mine to manufac-turers, \$2.

Coke.-We quote: Furnace Coke, \$3 at

at mills in Pennsylvania. Iron Rails are out of market. No demand for them.

CINCINNATI.

APRIL 16, 1883.—Pig Iron.—The market has been fairly active during the past week, without developing either weakness or strength in prices in following quotations: Best No. 1 Hanging Rock Charcoal

3	Foundry	\$25.50 (@ \$26.00	0
5	Good	25.00 (
	Tenn. and other Southern brands	22.00 (@ 22.5	0
	No. 2, 50¢ @ \$1 less.			
t	No. z Hanging Rock Coke	22.00 (@ 23.0	0
	Southern	21,00 (
7	No. 2, \$1 less.			- 1
	American Scotch No. 1	22.00 (@ 22.5	0
9	No. 2, \$1 less.			- 1
0	Silver-Gray Softeners, No. 1	21.50		0
	" No. 2	20.00 (20.50	0
	Forge, for the range of grades and			
	makes	18.00 (23.50	0
	Cold Blast, Car-wheel kinds	28.00 (@ 31.00	
1	Warm Blast	25.00 6		
	Scrap Iron, Cast	.50 (
Ш	Wrought	.90 (
	Rails	23.00 (
4	" Car Wheels, ? D	,01 (
	Bar Iron, \$2.60 card rate; co		_	- 1
1	from 1-10¢ to 4-10¢ on orders	for de	sirable	1
-1	sizes. Nails, \$3 to the trade,	soo k	OUTE OF	. 1
	more; car lots, \$3.10; less th		ir lots,	
1	2-10¢ @ 4-10¢ more. Market a	ctive.		1
1	, -, ,			1

ST. LOUIS.

HOFFER & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, report to us as follows, under date of April 14, 1883: Iron has declined somewhat since our last report and but little is being sold. Quotations are HOT BLAST CHARCOAL IRONS.

Missouri \$21.00 @ 22.00 Southern 22.00 @ 23.00 Ohio 27.00 @ 29.00
COAL AND COKE IRONS.
Missouri \$21.00 @ 22.00 Southern 20.00 @ 22.00 Ohio 21.00 @ 26.00
MILL IBONS,
Red Short. \$19.00 @ 21.00 Neutral 18.00 @ 20.00
CAR WHEEL AND MALLEABLE IRONS.
Missouri \$23.00 @ 24.00 Southera 25.00 @ 30.00 Ohio 25.00 @ 35.00
-

LOUISVILLE.

GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of April 14, 1883: The market is quiet. Buyers are purchasing only what they need for immediate use. We quote for cash, in sound lets as follows: round lots, as follows. FOUNDRY IRON.

,	Coke	82.00 @ 22.50
,	No. 1 Southern Stonecoal and Coke.	22,00 @
	No. 2 Southern Stoneccal and Coke.	20.50 @
l	" American Scotch "	20.00 @ 21.00
٠	Open Silver-gray	19.50 @ 20.00
	Close Silver-gray	19.00 @ 19.50
	MILL IRONS.	
	No. 1 Charcoal	80.00 @ 21.00
	No. 1 Stonecoal and Coke, Neutral	19.50 @
	No. 2 Stonecoal and Coke, Neutral	18.50 @
	No. 1 Stonecoal and Coke, Cold-short	18.00 @ 18.50
	No. 2 Stonecoal and Coke, Cold-short White and Mottled, Cold-short and	17.50 @ 18.00
	Neutral	17.00 @ 18.00
	CAR WHEEL IRONS.	
	Hanging Rock, Cold-biast	32.00 @ 35.00
	Hanging Rock, Warm-blast	25.00 @ 27.00
	Alabama and Georgia, Warm and	
	Cold-blast	26.00 @ 28.00
	Central Kentucky, Cold-blast	26.00 @ 28.00

Steel—Continues unchanged from our previous report; quotations remain somewhat unsettled and demand continues fair. We quote as follows: Tool, 12¢; Maching We quote a there is no improvement to note on Bar Iron at least. Supply seems ample and demand only moderate. Sheet, however, is evidently reacting from the extreme figures obtainable in February and early March. Some mills claim to be sold up to their full capacity for 60 days, and are not soliciting further specifications. An advance of \$2 \cong to may be quoted. In event of a general closing down in June, this class of Iron would advance most rapidly, as it is always most sensitive on account of the limited production. Were it not for the high freights ruling, many Western orders would find their way to Eastern mills. Hoops and Bands are still dull. Nails are arriving in fair quantities and selling freely at reduced figures. The manufacturers' card is now nominal, and seems at the meetings to be passed, like the only moderate. Sheet, however, is evidently seems at the meetings to be passed, like the compliments of the day, simply as a matter of course. Horsesboes have declined, consequent on receipt of circulars from the of course. Horseshoes have declined, consequent on receipt of circulars from the manufacturers. To the mill prices, \$4.25 for Horse, add freights, and the price for this market will be the result. No article in the trade probably is sold on as close margin as Horseshoes. As leaders, they certainly take the heal of the tandem. Barbed Wire is much cut in price; the unlicensed is offering at special bargains, but few parties wish to

Asa Snyder, Iron Merchant and Furnace Agent, writes as follows, under date of April 16, 1883: A good business is prevailing in all our Iron industries, and, in consequence, the consumption of Pig and Scrap

Ores.—We quote: 50 % Brown Hematite, Production is large; still, both of the latter items are weak and declining. Production is now in excess of consumption, and so depresses the market. We quote as below:

j	No. 1 Scotch Pig Iron
	NO I Authracite Fig Iron.
	No. 2 " " "
	No. 2 " 22.00 @ 23.5
	THE THE WHITE CORP LIE ITON
	No. 2
	No
	white and Mottled
	Virginia C R Chargood
	Virginia C. B. Charcoal
	OR DOM, Mans (Carload lots)
	Old Wheele 24.00
	Old Wheels
	Cast Some No. 1 21.00 @ 22.00
	Cast Scrap, No. 1 18.00 @ 19.00
	Richmond Refined Bar Iron
	Horse Shoes (Trodeman)
	Horse Shoes (Tredegar) 4.50 @
	Mule " 5.50 @
	3.50 @

BALTIMORE.

W. N. Wyerh, Iron and Steel Merchant, bushel.

W. N. Wyerh, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of April 16, 1885 the mills in Penusylvania. Iron Rails are out groove as for some time reported—that is, quiet and disappointing for the reason. Values remain quotably unchanged, but favoring purchaser:

R. C. Hoffman & Co., Pig and Railroad Iron Merchants, No. 21 South Frederick Street, report us as follows, under date of April 17: The Iron market continues quiet, purchases being made for immediate use only, and without any material change in prices. We quote prices as follows:

Daitimore	Charcoal	W	neer	Iron (all		
Baltimor	e Ore)				\$28.00 @	20.00
Virginia C.	B. Char	. W	heel	Iron	28.00 (4)	
Anthracite	No. 1				23.00 (4)	
**	No. 2				20,00	22.00
0.6	No. 3				18.00 @	10.00
4.6	White a	nd :	Mott	led	16.00 @	
Charcoal C	. B. Bloc	ms			50.00 @	55.00
Refined Blo	oms				45.00 @	

SAN FRANCISCO.

J. W. HARRISON, Coal and Metal Broker, 204 California street, reports as follows, under date of April 7, 1883: Piy Iron.—
The prices for loading are a little off, with a tendency to still lower figures. The arrival of 1500 tons of Scotch on one vessel this week has somewhat softened prices for spot. Foundrymen anticipate a profitable trade this coming season, and are ordering liberally for future loading.

To arrive. have to report a still further decline of about 25¢ ? ton for cargoes to be loaded within the next three months. If grain charterers

do not advance their views on freights above 60/ for next season, Coal will remain steady at present quotations, as they leave ships a very light inward freight. The Coal market is more freely offered than any other of the foreign Coals. Ships are plentiful there, and No. 1 Hanging Rock Charcoal \$25.00 @ 26.00 British port.

No. 1 Hanging Rock Stonecoal and it is more contiguous to us than any other

		200	A4 E	1 V CZ .	677	PURE.
ı	Australian	\$0.75	0	7.00	87.10	per tor
ı	Liverpool Steam	7.12%	0	7.25	7.50	16
ı	West Hartley	7.25	613		8.00	
ı	Scotch Splint	7.00	@	7.25	7.50	2.4
J	Cardiff	7.25	60	7.50	7.50	4.4
1	Lehigh Lump	13.00	a	13.25	13.00	+6
j	Cumberland, bulk	31.00		11.25	17.03	14.6
I	Egg, Hard	12.25	0	12.50	12.00	1.6
1						

Our English Letter.

Review of the British Iron, Steel: Metal and Hardware Trades. (From Our Regular Correspondent.)

LONDON, ENG., April 2, 1883.

commenced on the eve of Good Friday, and spoiled a good deal of last week. In scarcely any instance within my knowledge was work resumed earlier than Wednesday last, while the head of the tandem. Barbed Wire is much cut in price; the unlicensed is offering at special bargains, but few parties wish to buy even the possibility of a lawsuit. From winter temperature the mercury has bounded into the 80's, and vegetation is responding. A few days of this weather will show up the winter wheat in its true proportions. up a great deal of the time lost during the wet winter and autumn. Further, they truthfully state that the co'd weather has kept back the fruit trees and other vegetation in splendid fashion, whereby said vege-

good omen, for there can be no question whatever that we depend to an enormous extent upon our agriculturists. Until their prospects improve we cannot hope to forge ahead with any degree of rapidity; when they get a fair start, then all our manufac-turing industries cannot avoid following suit. Within the past few days the weather has come remarkably sunny and warm. write I sit in a glow of glorious sunshine, which must benefit all nature, as well as do much toward setting in motion the springs of trade.

THE IRON MARKETS

have been very quiet, as you will have inferred from the preceding remarks. In scarcely any quarter have the changes recorded been momentous, and the volume of business done has been quite limited. The holidays, falling simultaneously with the end of the quarter, have emphasized the tendency to do as little as possible prior to the quarterly meetings, which will take place a few days hence. There is some speculation—as there usually is, in fact, just prior to quarter day—as to the probable course of prices, but, so far as I can learn, there is not the slightest anxiety about the result. As I have pointed out over and over again, the day is past when the seven or eight marked-bar houses of South Staffordshire had it in their power to fix quotations as they thought fit. They still have a certain amount of influence, but it is of a passive, and not of an active, nature. Their action is mostly a result, not a cause, and what they way do ar leave undone has no mateand not of an active, nature. Their action is mostly a result, not a cause, and what they may do er leave undone has no material influence on the market as a whole. Circumstances are constantly minimizing their influence, not merely because excellent unmarked bars can be had at lower prices than theirs, but because the growing use of steel is slowly, but surely supplied. prices than theirs, but because the growing use of steel is slowly, but surely, supplanting their special products. Yet again, they cannot agree among themselves, two at least of the "marked" iron houses having for a long time past refused to follow the lead of Lord Dudley and Messrs. Barrows & Sons, who are the principal producers of this grade of iron. (Lord Dudley himself, I may remark parenthetically, is quite incapacitated from taking a serious part in any kind of from taking a serious part in any kind of business, although he is not so bad as he has what may happen at the forthcoming gatherings I do not pretend to be able to fore-tell, yet I should be vastly surprised were any change of importance to be declared. any change of importance to be declared. Marked bars stand at £7. 10/ % ton, with the usual 12/6 extra for Lord Dudley's Round the usual 12/6 extra for Lord Dudley's Round Oak fron, and at those figures I anticipate they will remain. Certainly no advance could be supported, and I suppose the iron-masters will not move in the other direction, not withstanding the lower rate of wages declared by the Arbitration Board's accountants. Cheaper fuel and wages may cause with a rectioners of medium and company to the predictors of the ants. Cheaper fuel and wages may cause some of the producers of medium and common iron to shade off their present prices, especially if there should be the temptation of large orders, but I think it open to question whether prices of most kinds of ordinary merchant iron are not now about as I we as they will be any time these next three months.

There are vague rumors afloat as to the probable presence of buyers from the United States at the Birmingham meeting, an imstates at the Birmingham meeting, an impression having gained circulation that your consumers of sheets, hoops, cotton ties, wire rods, tin plates, &c., will be glad to feel the pulse of the market, preparatory to the placing of orders for delivery on and after July 1st next. Of the probabilities of this rumor I confess myself wholly unable to judge in advance, but I shall certainly watch the happenings at Birmingham with added inhappenings at Birmingham with added interest by reason of the expectations thus awakened. At present I can only say that I have very little evidence either pro or con.

In the crude iron making districts there have been no alterations worthy of special mention, save a steady giving way of war-rants at Glasgow. This has happened despite the equally steady decrease in Connal's steaks, and in the teeth of fair shipments, good local employment and the high values of makers brands. The public is evidently losing faith in Scotch warrants as a specu-Intive medium, and in the absence of out-siders the "ring" have insufficient vitality to keep the game well alive. The strike of coal miners in the East of Scotland has extended its area since I last wrote. In Mid and East Lothian about 1000 men are out in opposition to a reduction in wages of 10%.
The coal miners of Fife and Clackmannan

The coal miners of Fife and Clackmannan is very easy, with only a very mouerance days of eight hours each weekly, commended to restrict their labor to five amount of business on hand in the open market. The shipments are improving, however, the home deliveries are good, it sume wider proportions, it must have a weighty influence on iron before long. The Middlesboro' market is extremely dull and flat. At a meeting of the North of England Board of Arbitration, held at Darlington on Thursday, March 29, it was stated that the men at the different works had agreed to the propositions submitted at the previous meeting with regard to wages and restriction of cuitput. for six months the present rate of wages should be continued, and that for the follow-ing three months Mr. Dale's sliding scale of one-sixth above shillings for pounds should be put in operation to the end of the year. It was also decided that as it was desired to effect a lessened produc- @ 53/ for mixed lots of West Coast hema tion of finished iron, with a view to ascertain if such reduced make could be disposed of at higher prices, work should be limited to Cleator. at higher prices, work should be limited to ten shifts per man per fortnight, or five days per week, till the end of the year, provided that all the works connected with the trade exad be got to carry out the plan, as the men asserted would be the case. It will be most interesting to note the outcome of these n well and daring participations of workmen is the practice of restriction.

on the West Coast matters are virtually emrchanged, but with no worse tone than that last noted. Elsewhere crude iron is show of sale and not quite steady in price. As to ordinary finished iron I have already had something to say, which I may supplement by remarking that transactions are few in number and unimportant. Iron rails and blooms are neglected and quite nominal.

London, &c., and the only sales for your market of which I have heard have been of small lots for San Francisco. Old railway leaf spring steel is dull at £4. 15/and upward n, f.o.b. Crop ends are 60/ 12 ton, net cash, Wales, but stocks are said per ton, f.o.b. to be low.

are steady at £5 @ £5. 7 6 ? ton for ordinary flange sections, &c., of 50 lb ? yard and upward. Many of the best makers are now well sold ahead, and do not care to quote far forward. Many optional orders have been placed by home roads at low prices been placed by home roads at low prices and with long-dated deliveries. At the annual meeting of the shareholders of Charles Cammell & Co., Limited, Sheffield, last week, Mr. George Wilson, chairman and managing director of the company, in alluding to the new mills, &c., at Workington, said: "Take the largest concern in this country for rail-making. The steel works, with the formers plant tracked, have contracted to the contract of the country for rail-making. with the furnace plant attached, have cost about £900,000, and they turn out 5000 tons about £900,000, and they turn out 500 tons of rails per week, which is equal to an expenditure of £150 \Re ton per week of make of rails. Take another—the largest works on the West Coast of England. They have cost about £600,000, and I am told they have never made more than 2200 tons of ingots per week; but I will be generous, and give them 2500 per week of finished material. Their actual expenditure is equal to £240 % ton per week. Take another works, which are represented to me to be the most econom-ically constructed of their kind on the West Coast. They have cost about £300,000, and will give them a total of 2000 tons of finished material, which, however, they have never reached. This is equal to £150 \$\mathbb{P}\$ ton per week actual outlay. Now, our works and furnaces at Workington, when they are completed, will cost about £270,000, but I am going to throw in the whole working capital as well, and call it £350,000, so as to provide for every contingency that can arise in the way of costs, and we shall turn out every week 30co tons of rails, which gives us an actual expenditure of £116 7? ton per

week, as against £150, £240 and £180."

The Dronfield mills turned out 36,000 tons of rails during the last four months' working there. They are now undergoing removal to the new site.

SCOTCH PIG ITON

continues quiet, as already noted, yet makers' brands do not show a decline in propor-tion to the weakness of warrants. The labor troubles, mentioned elsewhere in this letter, are causing some anxiety, but the advent of warmer weather will probably tend to the advantage of the employers, by lessening the demand for house fuel. There are III furnaces at work in Scotland (including 7 on hematites), against 107 a year ago. In Connal's Glasgow stores there are 585,059 tons (a decrease last week of 1431 tons), as compared with 629,819 this date 1882. Shipments to date this year have been 129,401 tons, or 5769 tons below those of the corresponding period of 1882. To Canada 70 tons and to the United States 1500 tons were sent last week. Importations of Middleboro' pig iron into Scotland to date have been pig iron into Scotland to date have been 55,831 tons, a decrease of 16,625 tons this year. Writing from Glasgow on March 30, James Watson & Co. said: "The iron market has been very dull and weak, the price of warrants having receded to 47/\$\text{P}\$ ton. The demand for makers iron continues exceedingly quiet, although the quotations for special brands are still well maintained. The Middlesboro' iron market is in a similar position to this one, and No. 3 is now quoted at and desboro from market is in a similar posi-tion to this one, and No. 3 is now quoted at 40/\$\frac{1}{2}\$ ton. On Tuesday the warrant market here fluctuated between 47/6 and 47/7½\$\frac{1}{2}\$ ton, and on Wednesday it receded to 47/4½, cash. Yesterday the price still further declined to 47/1½, and to-day it touched 47/, closing with buyers at 47/0½, sellers asking 47/1 % ton. The shipments last week were 12,421 tons, as compared with 12,375 tons for the corresponding week of last year." We quote:

			No. I.	No. 3.
G. M. B., at G	lasgo	W	40/	47/
Clyde,	4.6		51/9	49/9
Coltness,	0.0			
Langloan.	4.0	*** ******		
Gartsherrie,	0.4			
Summerlee,	0.5			55/
	0.5			
Calder,	44			
Carabroe,				50/
Glengarnock, a	at Ar	drossan	55/	49/6
Bglinton,		*****	49/6	47/
Dalmellington.		66		
Shotts, at Leit			64/6	\$6/
Kinnell, at Bo	ness		48 6	47/6
Carron, at Gra	nger	nouth	50/6	

MIDDLESBORO' PIG IRON

is generally believed that bottom prices have been reached. The plate mills are in receipt of additional orders from the shipbuilders, and are rather firmer as regards prices of plates. For No. 3, 40/ @ 40/6 are d, the lower rates by merchants. For ship-plates. G. M. B., f.o.b. makers' wharves in the Tees, with regard to wages and restriction of out. The arrangement come to was that

No.	ı	Foundry			-44	6	1	Mottl	led									. 3
b.+	8	4.1			. 42	6	ı	Whit	0.						۰			. 3
8.4	t	11			. 4C	6	1	Reflu	red	1.2	ME	st.	18					. 6
1.0	à				40		1	Kent	lec	g	e.							A
-6.6	4	Forge					ĺ	Cindo	er.						,			. 3
		HEMATIT	E	A	ND	E	E	SSEM	EF		PI	G		I	R	0	X	

@ 53 for mixed lots of West Coast hema tites and makers' brands, as under: No. 2. 55/6 53/ 53/

No. 1.

0	Cleator	. 56/	55/6	55/
8	Lonsdale	. 54/	53/	53/
d	Workington	. 53/6	53/	52/6
	West Cumberland		****	444
0	Lowther		53/	52/0
n	Moss Bay			
t	Distington	. 53/	53/5	52/
	Harrington	. 34/	53/3	52/6
0	Solway	. 53/0	53/	52/6
11	Maryport	- 54/	53/6	53/
	North of England	hematite	iron of	this
y	class, f.o.b. Cumberlan	d ports,	&c., is:	
0		Ordinary.	Besse	emer.
8	No. 1	54/6	53	6
	No. 2	53/0	52	6
	No. 3	5:/6	5.8	6
4	No. 4, Foundry	52/6		
-	No. 4, Forge	@2/6	* * * *	
0	Mottled	52/6	0.0	
S	White	52.0	4.4	

TIN PLATES and blooms are neglected and quite nominal.

Old rails are only inquired for on home account; they are firmly held for more money tion, some measure of which is doubtless due by the railroad companies. Heavy wrought to the wholesale "slaughtering" of your scrap is dull at 57,6 @ 59, \$\mathcal{P}\$ ton, f.o.b. market indulged in a short time ago by two

rival "big" houses on this side, who each rival "big" houses on this side, who each threw heavy quantities of plates into United States ports in order to damage the other. Henry Rogers, Sons & Co. write me from Liverpool as under: "Tin plates are without any special feature. Charcoals are steady. Cokes have been firm at 16/@16/6 for BV grade, and the lower brands at 3d. less. There is a large inquiry for waster cokes, which are realizing 14/9 @ 15/ \$\varphi\$ box, and are therefore comparatively much dearer than perfects. The general demand is poor, considering the season of the year, and according to the latest advices from and according to the latest advices from New York they are selling there at propor-tionately lower rates than here. 'It is a long lane that has no turning,' but it is difficult to predict, with regard to this industry, when the desired point, now so long looked forward to, will be reached. At present there are no immediate signs of a revival, nor does there seem any probability of prices materially declining." In London, I. C. cokes of ordinary quality are 15/9 @ 16/, and wasters 14/3 @ 14/6 \$\to\$ box. FREIGHTS

are almost normal to your Northern ports. Pig iron, Glasgow to New York, by regular stamer is called "easy" at 5/ 1/2 ton, which means, I suppose, 4/ @ 5/ really. East Coast and Wales rates for iron and East Coast and Wales rates for iron and steel are 6/6 @ 8/, and London 4/ @ 7/6 by steamers. Liverpool to New York for pigiron is nominal at 4/ @ 5/, while Liverpool to Philadelphia by American Steamship Co. has advanced from 7/ to 7/6 and 8/ @ ton. Rates of freight by sailing vessels for pigiron from Glasgow are: Montreal, 12/6; New Orleans, 15/ (East Coast, 9/); New York, 12/6; Philadelphia, 12/6 (East Coast, 10/); Portland, 13/; Providence, 12/6; San Francisco, 20/; Baltimore open to offers.

FOREIGN.

FRANCE.

FRANCE.

(Moniteur des Interets Materiels)

Paris, April 2. 183,—Metals,—Business is not what it ought to be by this time; it will take some time ere confidence is fully restored. Field labor is also retarded by unfavorable weather. Metals have been dull, leading to a general decline. We quote; Copper, Chili Bars, 168 @ 174.25; Ingots and Slabs, 176.25; Best Selected, 178.75, and Pure Corocoro Ore, 170.75 france \$100 kg.; Tin, Banca, 263.75; Billiton, 258.75; Straits and Australian, 257.50, and English, 257.00; Lead, 37.25 @ 44. and Speliter, 40.50 @ 44.50. Iron.—The bankers of Paris have curtailed the advances they have hitherto made to building companies in this city. The result is that a good many of them will have to suspend operations wholly or in part this year, and of course the consumption of Structural Iron will in this manner be notably curtailed, which can hardly fail to affect its price as well as that of other sorts. So far the market keeps tolerably steady, however, at 13 50 francs Merchant, as well as Flooring, 24.50 Sheets, and 27 Wire Nalls, No. 28, in bulk. At the North the Valenciennes meeting of blast-furnace owners has come off, and at the same time that of rolling, mill owners. Curtailed production has been resolved upon without a discharge of workmen. Merchant fron is maintained in the North at 18 francs \$2 100 kg. In the Ardennes, on the other hand, rolling-mill products still do remarkably well, Coke Merchant at 18 @ 18.50. Nall works continue busy in the district. In the Haute-Marne the situation is, comparatively speaking, a satisfactory one; they quote Coke Merchant, as destination is, comparatively speaking, a satisfactory one; they quote Coke Merchant, as destination is, comparatively speaking, a satisfactory one; they quote Coke Merchant de reduction has been resolved to reduce the Pig Iron output by 100,000 tons during the coming 12 months. In the Loire basin there have dropped in fresh orders, and Government commands are to be adjudicated upon. The Creuset Co. received orders fo

BELGIUM.

(Moniteur Industriel.)

(Moniteur Industriel.)

Brussels, April 3, 1833.—Iron.—Not much of a change has occurred during the week; if anything, the situation is a little less satisfactory. Orders are still scarce, so that a good many works begin to want them very much at least large ones, to carry them fairly into the summer season. Small orders they still get all along, but at this time of the year even heavy orders should abound. Rolling mills running on specialities still have work on hand, and so have the loc motive shops, but, on the whole, the outlook is the reverse of bright. Meauwhile Pig Iron keeps steady; we quote English, 5,90 @ 6 francs; Domestic Foundry, 7,25 @ 7,50. Fuddling ranging between 5,23 and 6,25, in Luxembourg, Foundry is steadily held at 6,25, in Luxembourg, Foundry is steadily held at 6,25 and Puddling at 5,75. Merchant sells in moderate amounts at 13 francs No. 1 and 14 No. 2. Beams are firm at 14, being in request; Corners are weak at 14,50, while No. 2 sheets sell at 18, No. 3 at 20, Commercial at 22 @ 24, Thin Sheets at 24 @ 26, and No. 4 at 28. Ralicoad material manufacturers in Belgium are anxious to secure the contracts in connection with the Russo-Persian Raliroad commenced to be built this mouth from Acht to Teheran into the heart of Persia. These contracts will be given out at Tiflis by Mr. Boital, which gentleman has secured the privilege of building these Persian lines, and who is well disposed toward Belgian makers. Metals are flat; we quote Ingot Copper, 176,50; Banca Tin, 260; Billiton ditto, 259; Soft Pig Lead, 22 75, and Speiter, 26 francs § 100 kg. Coal has, on the whole, continued steady; we quote Domestic, 13 @ 20; Gas Coal, 20; Industrial, 9 @ 15; Coke, 19, and Half Washed, 21 @ 22 francs § too.

GERMANY.

(Borsenhalle.)

GERNANY.

(Borsenfalle.)

Hamburg. April 4.*1832.—Iron —The improved feeling in the Iron market in Germany has continued to prevail during the week under review. Transactions on a large scale have been effected in Foundry Fig. good brands of which remain in request. Finished Iron also enjoys a good demand, but rolling-mill owners have so far been disappointed in their attempts at raising prices. Iron of all kinds is, however, so much wanted that there are eager buyers at current rates. Sheet Iron is, as a general thing, held with considerable firmness, especially thin Sheets. Steel works are overloaded with orders, while fresh ones impend for railroad material. It should be remarked, however, that the consumption of puddling Fig. Iron has not increased sufficiently to encourage blast furnaces in Westpha'ia to resume full production; they are, nevertheless, busy enough to decline the least concession demanded by rolling mills. At any rate, it is an encouraging fact that in Germany the fron trade is in a satisfactory position, while in neighboring countries this is less the case; much of this is due to the readiness with which our makers have adapted themselves to new methods, in which respect they have shunned neither pains nor sacrifices. In this manner valuable custom abroad has been retained which otherwise would have gone elsewhere. Metala.—Our market has been devoid of life. Lead has been quiet at 15 (26 15.5c for English Pig. 14 (26 14.5c for German and 17 (26 17.5c Spanish. Copper has ranged all the way between 71 and 73; Tin is steady at 105 (20 15.8c, and Spelter inanimate at 10.25 (20 15.9c).

EAST INDIES.

(Gilfillan, Wood & Co.)

(Gilfillan, Wood & Co.)

Singapore, March 5, 183,—Tim.—The large shipments last month have caused the London market to continue flat, and ours has remained without activity. Prices touched \$5,0.5, but at the close there are no longer sellers at that, and some recovery seems probable. Sales during the past fortnight aggregate only 25,0 tons. Shipments last month from the Strauts were 1550 tons to London and coo tons to New York, but this month they are likely to be moderate. Freights.—During the past fortnight a considerable number of saling vessels have come in, and tonnage is in ample

supply. Steam tonnage is also in large supply, and rates all round are weak. For New York the Haze and Gardner Colby are fully engaged, and another vessel is now required on the berth. The Fannie M. has cleared, leaving the berth vacant. Exchange is steady at 1/81/4 for six months' credit drafts on London. Exports per the latter vessel to Boston. \$44 picula Tin; 420 per Bengloe, to New York; 970 per Thames, from Penang to New York; and 422 per Glaucus, from Penang to New York; together, 15,665 piculs since January 1.

(Schmidt, Kustermann & Co.) (Schmidt, Kustermann & Co.)

PENANG, Feb. 28, 1883.— Tin.—The market a fortnight ago opened at \$20.05, in order to rebound to \$30, 40, but soon after receded to \$30, at which figure considerable sales took place, the metal closing firm at \$20,05. Fortnight's receipts. 7700 piculs; sales 11.60; of these 7860 taken by Europeans and 3740 by Chinese. Shipments so far 12,500 piculs for England and 9018 for America.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, April 2, 1883.—Tin.—Since the late sale the market has retained its firmness at 58 5.0 Banca, spot, and 59 deliverable from the next May sale; Billiton, spot, 57.75, and July, 58.50 guilders % to kg.

Banca. March deliveries	1883. Slabs,	1882. Slabs. 8,991	1881. Slabs. 14.367
Since January 1 Stock on warrants Stock on hand for future	29,796 44,170	93,391 27,053	36,465
sales	65.989	80,445	75, 196
Afloat	22,400	34,000	6,400
Total	32 559	141,498	104,624
March deliveries	5,714	9,436	11,965
Stock here and at Amster-	19,394	84,355	24,847
dam	79-415	30,091	52,160
	28,251	22, 130	25,650
Deliveries of Australian Price of Banca Price of Billiton	fl 5834	fl 66% fl 66%	fl 53¾ fl 52¾
	25.54	7.0	2-14

CHILI.

(Weber & Co.)

VALPARAISO, Feb. 12, 1883.—Copper.—Unfavorable cable news from London causes an almost complete standatill in dealings, which have been confined to 762 quintals at \$17.85 @ \$18.65. Nitrate.
—The sudden rise in Europe has stimulated large purchases at rising rates, at which 524,00 quintals changed hands within the range of \$2.37½ and \$2.50. There were chartered for Europe 21,000 tons, and for the United States 2300 tous.

JANUARY EXPORT.

		1382.	
	Quintals.	Quintals.	Quintals.
To the North of			
Europe	497, 02	677.261	699.201
To the Mediterranean	8,001	28, 193	30,700
To the Atlantic States		181,030	123,433
To California			56.835
	Name and Address of the Owner, where the Owner, which is the Owner, which		-
Total	506,703	887, 193	912.178
From Iquique it is re- works have suspended are preparing to do so but not sufficiently s- Coal will remain sear- unless Australia sudde way. We quote Engli days' sight, on London	operation Prices to to encore for sor only resumsh 26/ @	have ris ourage prome time nes shipm 28/. Exc	thers are en since, roducers, to come, ents this

Wages and Restriction in the British Iron Trade.

The question of wages and restriction in the iron trade, which for some time past has been preying upon the minds of British ironworkers and employers, appears now to be in a fair way to definite and satisfactory solution. As intimated in our columns a short time ago, a meeting of the Board of Conciliation and Arbitration was recently held to receive the reply of the operatives' delegates to the propositions of the employers. These proposals have now been formulated, and read as follows:

Resolved, That the following be the basis

of an agreement to be submitted to the various lodges at the different works, and supported by the delegates as being, in their ppinion, a satisfactory settlement of the pres-

nt wages question:
1. That the present rate of wages (7/9) s. w., or 8 '3 l. w., for puddling, and proportionate mill wages) shall continue in force until Saturday, 29th September, and thereafter until the 29th December shall be regulated by a sliding scale, based on 1/6 above shillings for pounds on the realized selling prices of all iron, extracted every two months

from the books of the employers.

2. That, in accordance with the request of the operatives, the employers are willing to limit the work in all mills and forges con-nected with the board to 10 shifts per man per fortnight for six months certain, and subject thereafter to three months' notice, to expire not sooner than the 20th December. provided the same restriction shall be applied and enforced at every iron works in the North

of England, whether the employers and workmen be members of the board or not.

3. That the object desired to be effected by the above-mentioned arrangement is a lessened production of plates, bars and angles at the works or the North of England, and to ascertain if such reduced make of iron can be disposed of at a higher relative selling price than heretofore, in the joint interest of the employers and operatives.

4. The change in the period of ascertainment by the accountant from three months' ment by the accountant from three montas to two months' periods is intended to effect are the monitor Dictator, the Supply, and the monitor Dictator, the Supply, and Burlington, the Antietam, the Glance and the Sorrel. Everything which can be used several occasions.

5. It is to be distinctly understood that the concession of the employers to the wishes of the Antietam, will be advertised and sold the operatives (as set forth in Clause 2) is general at all works throughout the North of England, and any failure to effect such an arrangement will exouerate all employer members of the board from carrying the League Island authorities. By special use at the Navy Yard. The Glance and Sorrel are tug-boats, and all the others members of the board from carrying the league Island authorities. By special use at the Navy Yard. The Glance and Sorrel are tug-boats, and all the others regular war steamships. England, and any arrangement will exonerate all employer regular war second from the Dictator, and ing will be taken from the Dictator, and most of the machinery will be taken out, so that there will probably be little of her left to sell. The other vessels, it is thought, can williged for freight purposes with a little months

Inquiry revealed the fact that there were only about 700 or 800 men who objected to these proposals. Those connected with the board approved of them, and it appears that the men at many works not connected with the board intimated that they would not work more shifts than were worked at establishments where the wages were regulated Chicago have decided to declare war against by the board. Altogether, therefore, it the Bricklayers' and Stonemasons' Associans quite probable that the arrangem will be carried out on both sides. What the empl result will be to the trade of the districts date. result will be to the trade of the districts date. This brings the question, which origspecially concerned is yet uncertain, but the advantages or disadvantages, as the case an additional 50 cents per day, to a square may be, will undoubtedly soon become apparent, the new system of working having the contractors or the other parties have the been adopted on April 9.

TRADE PUBLICATIONS.

Illustrated Catalogue of the Lambertville Iron Works.

This is another example of luxurious cataouts and printing are beautiful. Good taste has been displayed throughout. Mr. Welsh, the proprietor of the works, has entered into a very elaborate and intelligent discussion of the points involved in the construction of of the points involved in the construction of his engine. He considers the efficiency of steam; the efficiency of the engine; the value of high steam pressures; of moderately high revolutions, and the detrimental effects of insufficient boiler capacity. His paragraph on the horse-power of boilers is a good one, and the recommendation to manufacturers that the boilers furnished will appropriate a given weight of water per house evaporate a given weight of water per hour into dry steam is eminently sensible. If this method of stating the case were adopted universally, instead of the indefinite term "horse-power," there would be vastly fewer controversies between boiler purchasers and controversies between boiler purchasers and boiler-makers than at present. It is com-paratively easy to ascertain how much water a given engine is likely to require in the form of steam per horse-power per hour, and we think as a basis there is little trouble in getting exactly what is wanted and in settling the question of the power of the boilers without a dispute.

Carriage Builders' Hardware. We have received the 1883 edition of the We have received the 1953 edition of the illustrated catalogue and price list of carriage builders' hardwar's manufactured by H. M. Strieby & Co., Newark, N. J., formerly Strieby & Ward. The pamphlet contains something over 50 pages, and is bound in limit in instantian manager govern with gilt side limp imitation morocco cover, with gilt side title. The illustrations throughout the beok, which are woodcuts of excellent character, are printed in blue ink, which shows the forms represented and the character of the

goods described to advantage. Wrought-iron step pads of various designs and shapes, step plates, side har steps, body steps, drop perch gear irons, together with various styles of braces, clips, special bolts, slat irons, &c., comprise the goods shown. The illustra-tions are of excellent quality and the general arrangement of the book is such as to facil-

Machinery Catalogue.

itate reference.

From Warren Springer, of 195 South Canal street, Chicago, Ill., we have received his eighth annual catalogue and price list of machinery. The pamphlet is a little less than 100 pages, and contains a large assortment of general machines, including steam engines, wood-working machinery, sugar evaporators, mills, cotton hullers, corn shellers, fans and various small tools and fittings. The catalogue is very comprehensive, is carefully indexed, and contains much incarefully indexed, and contains much information of value to the general buyer of machinery. It would have been much more attractive, we think, if a little more care had been given the typographical features. It is printed on poor paper, and many engravings that are really excellent in character show to poor advantage.

British Views on Our New Tariff .-After a careful consideration of the effect and probabilities of the new tariff, the London Iron Trade Exchange remarks; "So far the new American tariff has not had the slightest visible effect on our market for iron and steel; but notwithstanding the reduc-tions in the internal taxation of the United States, we feel confident that the outcome of the revision will be increased imports of British iron into America. Wages may be reduced and other econom es effected in order to cope with the altered circumstances of American manufacturers engendered by the new tariff, but we feel sure that these measures will not reduce prices sufficiently to pre-vent an increased influx of foreign iron. Until the Americans 'show their hand,' and the prices at which they can sell, consumers will nesitate to commit themselves to contracts. Meanwhile, merchants here are seeking firm offers for delivery in July and August, which will 'draw' the American manufacturers, and we hope at quarter day to hear of more business doing on American account. During the debate on the tariff bill it was repeat-edly stated that the iron and steel manufac-turers secured but the smallest profits under the existing tariff. If this were so, the smelters of Bessemer iron using imported ores will be awkwardly fixed after July 1, for they will have to pay an extra I/ per ton on the ore they import, and the protection on their product is reduced I/I per ton."

Dismantling War Vessels -Six vessels of the United States Navy, included in the list of those which have just been condemned by a naval commission of inspection, and stricken from the official register, are now at League Island, and the work of dismantling be taken from them and reserved. As soon as this is done all of the hulks, except that alteration.

The trades unions out West are again quite active, but they are beginning to realize that they cannot have things their own way. The bosses are disposed to strike back. Thus, after a long discussion, the Master Masons' and Builders' Association at ungements tion, members pledging themselves not to What the employ any union workman after a certain longer purse.

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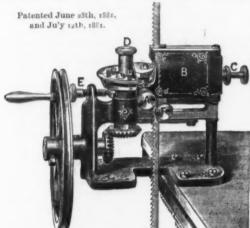
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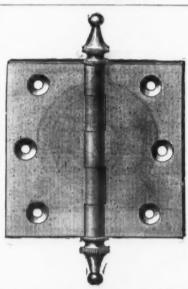
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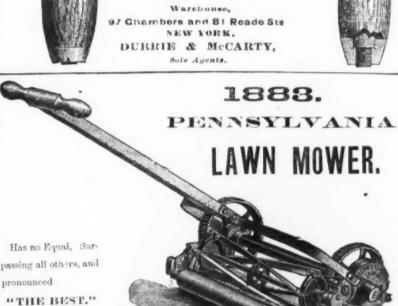
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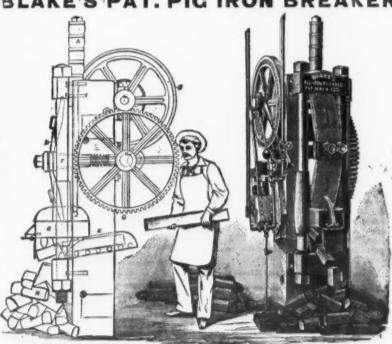
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SCIENTIFIC AND TECHNICAL.

The Brickwork of Chimneys

In a communication to the Deutsche Bauzeitung, Herr Eckhartz has expressed his opinion that the cause of crevices being formed in the brickwork of chimneys is the difference of temperature between the inner and outer surfaces. While in many cases in an ordinary factory chimney the mantel has internally a temperature of nearly 600 F., the external temperature is only about 60° on an average, the difference of expansion which is thus occasioned producing the cracks referred to. He dwells upon the use of iron hooping, and remarks that its object and result are not, strictly speaking, the prevention of expansion, but rather the attaining in the outer brickwork of a uniform distribution of the tension, and the prevention of its concentration at certain prevention of its concentration at certain points. The question whether wrought-iron rings in the inside of a mantel are liable by their own expansion to produce cracks has been for some time under discussion in German technical circles. A short time ago, Doctor Tomei recorded, in the journal referred to, his opinion that the binding of chimneys by means of iron inside the masonry was a measure only to be recommasonry was a measure only to be reson-mended in exceptional cases, and with the observance of special care in its execution. He considered that the external binding of brickwork was, however, a question which was to be regarded in a different light. Herr Eckhartz, though not founding his remarks exactly on those of Dr. Tomei, further illus-trates them by saying that if ironwork placed internally fails to prevent cracks, and even produces them, its employment in that way is not only superfluous, but injurious. If rightly constructed, he considers that for If rightly constructed, he considers that for resisting the effects of the wind no hooping is required by a chimney. In further elucidation of the theory that internal hooping is unsuitable, he remarks that the ironwork should, as a matter of course, not be exposed to a high temperature; and he maintains that all river incide masoners must under to a high temperature; and he maintains that all rings inside masonry must, under these circumstances, be subjected to the influence of heat. If they have not sufficient space for their expansion they exercise a pressure upon the external brickwork, and thereby produce cracks. From the facts thus quoted Herr Eckhartz deduces the thus quoted Herr Ecknartz deduces the recommendation that in order to provide the photography of sound vibrations were against the results of the difference in temperature to which allusion has been made, chemist, Professor Boltzman. According to perature to which allusion has been made, double walls should be constructed. He refers to the chimneys for circular furnaces which have been designed on this principle by Herr Hoffmann. He uses double mantels, each only half a brick in thickness, which are united by vertical ribs of the same thickness. Inside the chimney is an isolated mantel, half a brick thick, which is built up to the hight of 11 to 22 yards, according to temperature ruling in the chimney. This mantel is exposed to the most intense action of the heat, and from the nature of its con-struction is not injuriously affected by any extension which takes place. Herr Eckhartz claims for this method of construction the subsidiary advantage of economy in fuel, and adds that his personal experience confirms him in the opinion that it is the only system by the use of which iron hooping can be completely dispensed with.

The Decay of Bricks.

Recent observations of M. Parize tend to show that the weathering of brick walls into a friable state, which is usually attributed to the action of heat, moisture and frost, is in reality due to a microscopic creature, the action played by the weather being only secondary. M. Parize examined the red dust of crumbling bricks under the microscope, and found it to consist largely of minute living organisms, and a sample of brick dust taken from the heart of a solid brick also showed the same animalculæ, but in smaller numthe same animalcule, but in smaller numbers. The magnifying power of the instrument was about 300 diameters, and every brick showed the same distinctive features, but, in general, the harder the brick the fewer were the organism

The Electrical Resistance of Tempered Glass.

Some interesting experiments concerning the above subject were recently made by M. G. Foussereau, showing that the electrical resistance of glass diminishes considerably on being tempered. On the other hand, an-nealing tempered glass was found to restore its higher resistance The same may be said of tempered crystal. The resistance of glass, tempered or untempered, provided the glass is not unculy heated, is found to remain constant.

Armor-Plate Tests in Russia.

The last of an important series of armor plate tests which were commenced at the close of last year under the supervision of the Russian Government has recently been completed, and a condensed account of the experiments may not be without interest. The trials were made at Ochta, near St. Petersburg, the gun used on the occasion being the minch Aboukoff breech-loader. ous charges were adopted, but the prochilled cast-iron shell, manufactured at Perm, in the Ural, and weighing 553 Eng lish pounds. The plates tested consisted of a steel plate made by Schneider & Co., of the Creusot Works, France, and a compound plate made by Charles Cammell & Co., on the Wilson principle, at their works in Shef-field, England. Each plate measured 8 feet long by 7 feet wide, and was 12 inches thick, the compound plate having a steel face onethe compound plate having a size lace one-third of the thickness. The plates weighed each about :2½ tons, and were backed by 12 inches of timber and a couple of ¾-inch iron plates, supported by diagonal struts. The first shot discharged against the Schnei-The first shot discharged against the Schnei-der plate was with 132 pounds of powder at a velocity of 1506 feet. The projectile was smashed, but the plate was broken into five pieces, and was only kept in position by the 12 bolts which secured it to the target. The penetration was 13 inches, or more than through. The second was fired with 81 pounds of powder and a velocity of 1167 feet. The protection this time was 15 rate pieces, and, besides developing former cracks, the blow produced three new ones from 2 to 3 inches wide. The succeeding round,

fragments were left hanging upon the shattered backing, one piece, weighing about a ton, was found 13 feet behind the target, and 10 other pieces, weighing three tons together, were scattered on the ground in front. The projectile itself was discovered 740 yards in the rear of the target, and apparently uninjured. The Cammell bits are readily removable, their resharpen-plate was next tried, the first round with a 132-pound charge. There were a few cracks produced on the face, but concen-tric and radial, and they were of no importance. The indent was not more than 5 inches. As the plate was only secured 5 inches. As the plate was only secured to the target by four bolts at the corners, three were broken just behind the plate, the lower right-hand bolt only remaining as a fastening. The second shot, fired with 81 pounds of powder, fractured the solitary fastening, and allowed the plate to slip from the target. The second blow caused a piece of the plate at the upper left-hand corner, 5 inches thick, to break off. This was considered to be due to a local was considered to be due to a local defect in the welding together of the molds forming the iron back, as the welding molds forming the iron back, as the welding of the steel to the iron was perfect. The shot also caused a piece of the steel face varying in thickness from 1½ inches to 3 inches to scale off. There were no cracks produced at the back of the plate and the timber was uninjured. The projectile was smashed into small pieces, but as the head remained wedged in the plate and projected about 2 inches outward from the plate, the exact penetration could not be precisely determined. This concluded the tests for the time being, but fresh bolts having in the meantime been sent out to Russia, two addiant the bits retire from the pipe thread, so tional shots, making four in all, were fired at that the pipe may at once be withdrawn, the plate. The projectiles were completely destroyed, the compound plate remaining almost literally untouched. A few additional hair cracks were produced, while the penetration was insignificant. The result of these experiments would seem to justify the preference shown by the English Admiralty. preference shown by the English Admiralty in adopting compound armor, seeing that the Schneider steel utterly collapsed at the third round, while the Cammell plate remained intact after the fourth.

Photographing Sound Waves.

Some interesting experiments relating to the method devised by him, a small, thin platinum plate was fixed perpendicularly to the center of a thin iron tympan like that of a telephone. Another platinum plate was fixed near the first so as to form a fine slit between them, and this slit was brought into the focus of a collecting lens upon which sunlight fell. After passing through the slit the rays went to a selenium cell which, with two telephones, was in circuit with 12 Leclanché cells. Single sounds spoken to the tympan could be heard. When the rays, after traversing the slit, which varied in width with the vibrations, were rendered parallel and concentrated by a lens upon the selenium cell, the apparatus could be employed as a photophone. Intense sunlight concentrated upon the platinum plate by means of a solar microscope, and an image of the shadow of the platinum plate thrown upon a glass plate prepared with Vogel's emulsion, gave a photograph of the sound vibrations when the prepared plate was rapidly moved in a direction perpen-dicular to the line of light. It appears that for the vowel sounds the curves produced were simple, while those for the consonants were complex, those for l, m, n, r, p and k resembling the curves formed by König for "r" by his sound flames.

The Forbes Patent Die-Stock.

In the accompanying engravings we present to our readers the Forbes patent diestock in its most improved form. This tool possesses several excellent features that



The Forbes Patent Die-Stock .- Fig. 1.- The Front of the Die-Stock.

ommend it to pipe-fitters. In the first place it is a pipe-cutter as well as a die-stock, and is geared so that it requires but little power to operate, and will cut off and thread pipe of unusually large diameter by hand, one man being able to thread pipe of as much as

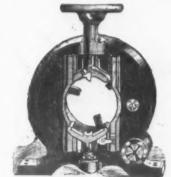


Fig. 2.—The Pipe-Gripping Mechanism.

c'ies in diameter, while the tool may be used for 6-inch pipe. Another advantage is that this tool does not require the usual strong and fixed bench to hold it, but may be bolted to a plank set upon a table or box, and annoyance of carrying pipe to and from the usual fixed strong bench in the workroom or cellar. Another commendable feature is that bits or chasers are used for threading instead of solid dies, and as these



Fig. 3 .- Face-Plate Removed and the Bits in Position.

ing becomes a simple matter. By a simple change the stock may be used to cut left-hand as well as right-hand threads, this change consisting in putting in left-hand bits and in replacing the right-hand screw ring with a left-hand one. After a piece of pipe has been threaded, all that is necessary is to turn the head in the apposite direction, which preserves the cutting edges of the



Fig. 4. - Back View of Face-Plate.

bits as well as saves the time usually lost in winding the dies back. Another inconven-ience often met with in pipe-threading tools is the clogging of the chips. This is over-come in the Forbes die-stock, there being ample room for the escape of chips as well as for free lubrication, the latter being very ssential to the production of smooth and clean threads.

The construction of the device will be



Fig. 5 .- Ratchet Wrench for Large Pipe and in Confined Situations.

understood from the following description: Fig. 1 is a general view of the front of the machine, showing the bits locked in position by the face-plate, and showing the gear by which the head is revolved, and the stud of the pinion that revolves it. The hand wheel is for operating the pipe vise at the back of the machine. Fig. 2 is a back view, show-



Fig. 6.-Face-Plate Removed and the Cutting-off Tool in Position

ing the mechanism for gripping the pipe The back of the machine is provided with ways in which the gripping jaws slide. The lower jaw is adjusted for hight to suit the operated upon, and firmly locked in its adjusted position. provided with an index pointer, and the face of the slide-way is marked by lines to suit the different diameters of pipe, so that this jaw may at once be set to the proper hight to bring the pipe central to the bits. The lower jaw being set, all that is necessary is, by means of the hand-wheel, to operate the upper one to firmly grip the pipe. Fig. 3 is a front view, with the face-plate removed, and showing the bits in position. Fig. 4 is a back view of the face-plate. Fig. 6 is a front view of the machine, with the faceplate and chasers removed, and showing cutting-off tool in position, Fig. 5 is ratchet wrench for use on large sizes of pipe, and is exceedingly useful in cases where the pipe is in the ground, and the die-stock is used to cut it off and thread it

without removing it from its position.

The No. I die-stock threads pipe from I to 2 inches in diameter, but has no cut-off. The large gear has cut toeth, and the pinion is of steel, working in gun-metal bearings. The gripping jaws are fitted with cast-steel faces, hardened. This improved tool is manuhardened. This improved tool is manufactured by Messrs. Forbes & Curtis, at Bridgeport, Conn. The shop for its construction has been fitted up with improved machine tools and appliances, all parts of the die-stock being made to standard gauge, so that any part can be readily supplied

on the grounds, which will contain a reading, writing and drawing room, an office and several smaller rooms. In the reading-room the committee, with the co-operation of different publishers, hope to place a collection of the leading works about Holland and India, and all such books as may be of use to foreign visitors. The pavilion will be situated in the immediate neighborhood of the post and telegraph offices, and will be connected with the central office of the telephone company.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

S. Cole & Son, iron founders and machinists, Lebanon, have made extensive additions to their buildings the past year, and now have one of the most complete foundries and machine shops in New Hampshire. They make a specialty in the building of trip-hammers for scythe and other forging shops, and have recently put several of them in the scythe works at New London. This firm also deal largely in lumber.

MASSACHUSETTS.

The Brainard Milling Machine Co., Hyde Park, are running on full time, with full complement of hands and plenty of orders. They have commenced work on the founda-tion of a building to be erected as soon as possible, to be used for an office and supply room adjoining their factory.

The Eagle Cotton Gin Co., of Bridgewater, did a larger business in the South last year than during any previous year since the war.

Another manufactory of silver-ware is contemplated at New Bedford.

The Ellis Foundry Co., of South Carver, have recently received an order from San Francisco for 800 stove kettles.

It is expected that the new and large factory of the Bridgeport Malleable Iron Co., at Bridgeport, will be booming in July next.

NEW JERSEY.

The copartnership heretofore existing between H. M. Strieby and W. S. Ward, under the firm name of Strieby & Ward, has re-cently been dissolved. The business of the firm named was the manufacture of carriage builders' hardware at Newark, N. J. The business is continued by H. M. Strieby, of the old firm, under the style of H. M. Strieby & Co, The dissolution of this firm will make no change in its business. We understand that increased facilities are con-templated, and that the well-known reputation of the firm for character and quality of goods will be strictly maintained.

PENNSYLVANIA.

The Columbia Agricultural Works, of B. F. Stener, at Columbia, were burned to the ground on the afternoon of April 13. The structure was a large one, built of brick and frame, and gave employment to about 50 men. The origin of the fire is unknown, but it is supposed to have originated from an explosion of a barrel of benzine. The building and contents are partly covered by insurance. The loss is about \$40,000.

The Reading Iron Works last week closed their sheet mill at the foot of Spruce street, and their rolling mill at the foot of Seventh street, for an indefinite period, owing to the dull state of the iron industry. Between 400 and 500 hands were thrown out of employment.

The West Middlesex Rolling Mill, which has been off for several weeks, on account of a break in the muck rolls, will resume opera-tions on Monday next.

The Easton Lock Works are in full opera tion and employ 35 men.

After an uninterrupted run of six months the Warwick Furnace recently "damped down," to permit the cleaning of the boilers, six in number. This necessitated a stoppage of four days. To overcome this stoppage in the future a duplicate battery of six boilers is now being made at the boiler works of Sotter Bros. The contract calls for the completion of the work in June. During the year ending April 15th, 1833, with one year ending April 15th, 1883, with one week's stoppage, this furnace is reported to

Work was temporarily resumed at the pipe mill of the Reading Iron Works on Monday last, for the purpose of completing some unfinished orders. Notwithstanding the run will hardly outlast this week it is to be a superscript of the Stranger I week of the stockholders of the Stranger I week of the stockholders. is unfinished orders. It is will hardly outlast this week, it is to be face hoped that additional orders may be secured, so as to keep the mill steadily in work for a long time to come.

The new stove foundry of Messrs, Duncan & Baldwin, of Pittsburgh, in the suburbs of Newcastle, which has been in course of erection during the past winter, is about completed, and was to go into operation on Wednesday last, the tirst stoves to be turned out the following Saturday. It is one of the largest establishments of the kind in the State. About 150 men will be employed, 90 of whom come from Pittsburgh. Its average daily capacity will be about 85

Messrs. Witherow & Gordon, Pittsburgh, agenta for the Whitwell hot-blast stoves, state that they have clused a contract for the remodeling of the North Lebanon furnaces, the building of a plant of three modern Whitwell fire-brick, hot-blast stoves, each Whitwell fire-brick, hot-blast stoves, each 20 x 60 feet, with suitable iron chimney, and to remodel their No. 3 Furnace so as to change its production from 300 tons per week, as it is at present, to 1000 tons per week. The plan also embraces the remodeling of their No. I Europee immediately after ing of their No. 1 Furnace immediately after. They have also contracted for a plant of three Whitwell stoves, each 18 x 60 feet, with corresponding draft stack, with Messrs. Ferguson, White & Co., for their Robesonia Furnace, intended to change its production Referring to the Amsterdam Exhibition, which was mentioned in our columns some time since, it may be of interest to state that a committee of Amsterdam journalists has been organized in order to promote the comfort and to lighten the task of Dutch and for-

which was with the same charge as before, or upon two barrels, or even upon the floor completely demolished the plate. While seven in case of necessity. The tool may therefore stay at the Exhibition. Under the supervision of this special committee, the Executive Committee of the Exhibition will erect a pavilion.

The No. 2 Furnace of this special committee of the Exhibition will erect a pavilion. plant was completed only two years ago.
Mr. Freeman and Mr. Grittenger contemplate the complete remodeling of this whole plate the complete remodeling of this whole plant, dismantling the four large iron hot-blasts they have at present, and all their bat-teries of boilers, substituting in the position they now occupy six Whitwell stoves, each 20 x 60 feet, with large draft stack for the double plant, increasing the hight and di-mensions of their furnaces, and building new batteries of boilers, with additional engines, so as to more than double the present output of this plant. The remodeling of the North Cornwall furnaces is to follow.

The Bellaire Window Glass Works, at Bel-The Bellaire Window Glass Works, at Bellaire, have their two furnaces, eights pots each, running full, and are turning out large quantities of No. 1 ware. The works turn out between 75,000 and 85,000 feet of glass per week

The Lane & Bodley Co., Cincinnati, have recently acquired additional factory accom-modations, and will soon be able to add 100 men to their working force. They have filled orders during the winter for several stampmills, ranging from 10 to 30 stamps

The Buckeye Works have received an order to ship 300 machines to Australia. Last year 60 binders only were sold there.— Akron Gazette.

ILLINOIS.

To facilitate the more rapid handling of their goods, the Chicago Steel Works are placing in an additional railroad track and are building four new furnaces.

The strike of the masons proved unfortunate for the June Mfg. Co., of Chicago, as t stopped all work on their new building, which was within three or four days of com pletion.

Chas. Kaestner & Co., of Chicago, are building one of the Gates patent pulverizing machines, to be sent to the Black Hills, and are also very busy manufacturing milling machinery.

It is reported that a corporation called the Alton Rolling Mill Co. has been organized, with \$25,000 capital stock, to build a rolling mill in Alton.

The Chicago Wire and Iron Works, a comparatively new concern, have booked within the past week 200 orders for their goods.

The Chicago Smelting and Refining Works are turning out large quantities of nickel-bronze castings for the Sperry Electric Motor and Car-Brake Co. and the Hercules Iron Works, of that city. They have just de-livered to the Chicago City Railway Co. 68,000 pounds of white-bronze castings.

Smith & O'Leary's Steam Hammer Forge Works, of Chicago, have lately been increased by an addition to their vise department, in which department they are now very busy.

The Cummer Engine Co., of Cleveland, will soon ship to Messrs. David Suppiger & Co., of Highland, Ill., one of their 250-horse-power automatic engines, with boiler and complete outfit. The company report very flattering prospects for their engine in the Eastern States, and it is understood that they have now orders for about 13 from their Boston agents. Among the orders recently received, we would mention one for a log-horse-power automatic engine for for a 100-horse-power automatic engine for Messrs. Hardesty Brothers, of Canal Dover; a 400-horse-power engine for the Brush Electric Light and Power Co., of Cleveland; a 150-horse-power engine for the same com-pany, at Kansas City, Mo.; a 16 x 30 engine for Messrs. Boden & Bill, of Ogdensburg, N. Y., together with complete outfit; still another, for Messrs. A. C. Meyer & Co., of another, for Messrs. A. C. Meyer & Co., of Baltimore, and a 125-horse-power engine for Messrs. George P. Frost & Co. (Sheyboygan Mfg. Co.), Wisconsin. The contract for build-ing the engine for the Mt. Vernon (Ind.) Mill and Elevator Co. was also awarded to the Cummer Engine Co., who, it is thought, will soon be compelled to enlarge their works, so as to meet the increasing demand for their engines.

MISSOURI.

The Great Western Glass Works, of St. Louis, which were shut down on the 9th of

of the Standard Foundry Co., of St. Louis, it was voted to increase the capital stock of the organization to \$25,000, paid up. The works of the company are now being greatly enlarged by the erection of new buildings, including a new office; a good deal of new machinery, including a boiler, will be put in, and the capacity of the concern increased about 50 per cent.

The Helmbacher Forge and Rolling Mill Co., of St. Louis, are putting in their new pin machines for making car coupling-pins, and report a good demand for links and pins.

MICHIGAN

The Detroit File Works, of Detroit, are recting a new 100-horse-power engine and soiler, and are also adding other machinery by which their capacity will be doubled. They report large sales of their goods, and are at the present time actively engaged in filling back orders.

The coke pool out of the Connellsville region between the Baltimore and Ohio and the Pennsylvania Central railroads has reduced the price of freight from the coke region to Pittsburgh from \$1.16\(^2\)\, to \$1 a ton. The rate that has heretofore been asked has been a constant source of complaint on the part of the Pittsburgh furnaces for many years, and has been a rate very largely dis-proportionate to the rate charged furnaces in

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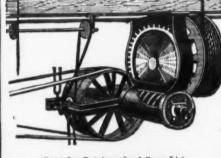
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the coming necessity of reduction, and are preparing themselves to retain a larger portion of trade than they might otherwise do.

Anthracite and Bituminous Coal Prodnet of Pennsylvania During 1882.

The advance sheets of the forthcoming report of Hon. Miles Humphrey, Chief of the Bureau of Statistics, contain some interest-ing information as to the coal production of Pennsylvania during the year ended Decem-Pennsylvania during the year ended December 31, 1882. From the particulars given it appears that there are 339 collieries, of which Luzerne has 120; Schuylkill, 116; Lackawanna, 52; and Northumberland, 30. The lowest is Sullivan with 1 colliery, and Dauphin with 3. The balance are located in Carber, Columbia and Susquehanna. The coal o. Jullivan County is classed as semi-anthracite. During the year the working days in the mines averaged 227¼ each, the highest being the Dauphin mines, with 270 days, and the lowest the Lackawanna mines, days, and the lowest the Lackawanna mines, with 208 days. There are 80,589 persons employed in and around the mines, Luzerne having an army of 31,631; Schuylkill, 21,-100, and Lackawanna third, with 14.55c. The amount paid in wages was \$32,740,042.65, the different counties paying as follows:

Carbon					******	\$955,398.1
Columbia						
Dauphin						631,580.0
Lackawanca						5.997.419.8
Luzerae						13,313,627.7
Northumberland	1					2,876,558.8
Schuylkill						8,354.540.1
Sullivan						89,327.0
The statistics	of	Su	squ	cha	nna s	ro include
in the return	8	of t	he	ope	erators	in Lack
awanna.						

awanna.

The production shows that in wages alone it cost over \$1 per ton to mine the coal, the total amount being 29,298,784.04 tons, as against \$32,740,942.65, the cost of production. Luzerne produced 12,680,611.05 tons; Schuylkil, 6,782,927.07 tons; Lackawanna, 5,406,405.10 tons; and Sullivan but 75,900 tons. The figures of the bituminous coal and coke production of Pennsylvania during last year are also given. The number of bitumicoke production of Pennsylvania during last year are also given. The number of bituminous collieries is given at 442, of which go are in Allegheny, 60 in Westmoreland, 54 in Fayette, and 44 in Clearfield, the rest being scattered among 22 counties. The average number of days of operation during the year was 237, and there were 40,136 persons employed, who were paid in wages \$18,775,553.05 to produce 20,694,110.02 tons of bituminous coal, loss than \$t per ton for production. In the State there are 10,063 coke ovens, of which Fayette has 5522 and Westmoreland 3281; the balance are located in moreland 3281; the balance are located in 17 other counties. Together they produced 3,216,543.17 tons of coke during the year.

Expansion Rubber Pump Bucket.—
The W. F. Harrison Pump Co., of Columbus, Ohio, are now offering to the trade an expansion rubber pump bucket that possesses some advantages to which attention is directed. This bucket is made of vulcanized rubber, placed upon a cone-like shank which is supplied with threads, so that by turning the bucket upon the shank it is contracted or expanded as circumstances may require. The advantages claimed for this bucket over other devices in use for the same purpose other devices in use for the same purpose are that it can be adjusted without the use of tools, and that it retains its elasticity when expanded to its greatest capacity. These expanded to its greatest capacity. These features will be readily appreciated when it reatures will be readily appreciated when it is considered that they prevent unnecessary wear of the tube and also of the bucket itself. Those who are interested in work of this kind and who make a business of handling pumps, will probably find it to their advantage to inquire into the merits of this device practically.

After much delay the fallen bridge over the Firth of Forth is in a way to be replaced the Firth of Forth is in a way to be replaced by a safer structure. Preliminary work has begun. On the south side of the Forth a field 20 acres in area has been rented by the contractors, who have built a shop 300 by 100 feet in size, that the girders may be fin-ished on the spot. Steam drilling machines are being set up, and operations will soon be pushed at full speed. Near by, in another large building, gas furnaces will be erected for the manufacture of the tubing that is to form part of the girders. The material will for the manufacture of the tubing that is to form part of the girders. The material will be brought in a partly finished state from Glasgow and perfectly fitted before it is put into place. Moanwhile a staging 50 feet wide and 1600 feet long is being stretched out over the river from the bank to the point where the first pier is to be built. On the Fife side similar operations are under way, but it will be three months, if not longer, before work on the bridge itself can be begun.

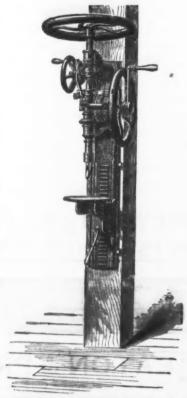
The highest bridge in the world is said to be the railway viaduct of Garabit, in France, now being erected over a river in the de-partment of Cantal. The bridge has a total length of about 1880 feet, and near the mid-dle of the great center arch, which is one of the noteworthy features of the structure, the hight from the bed of the river to the rail is 413 feet. The viaduct was commenced in 1881, and is to be completed next year. The cost is estimated at about

It is stated that the distinction of having made the deepest sounding in the Atlantic ever recorded has been achieved by the officers of the Coast Survey steamer Blake, cers of the Coast Survey steamer Blake, which recently returned to this city after a two months' survey. The deepest sounding ever before reported was 3862 fathoms, while the depth reached by the Blake was 4561 fathoms. The place of sounding was 75 miles north of San Juan, Porto Rico, and not far from the point where the first-mentioned death was recorded. tioned depth was recorded,



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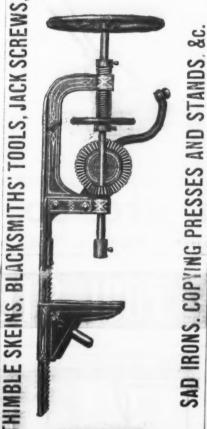
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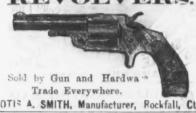
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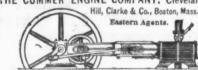
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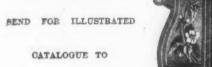
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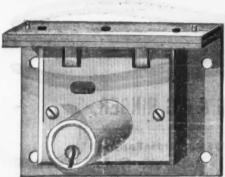
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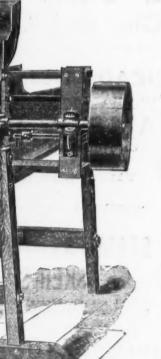
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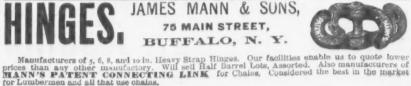
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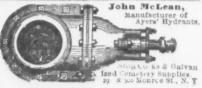
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Bannan Fras. B., Pottsville, Pa
Treen. Pig. Importers of. Abbott Jere & Co. (Swedish). New York & Boston. 39 Hubbar: Chas., 46 Ciff. N. Y. Lee ames & Co., 72 Pine. N. Y. Lundberg Gustaf, Boston. M'ss. Lundberg Gustaf, Boston. M'ss. Lundberg Gustaf, Boston. M'ss. School of the Company of the C
Ross. James W., Chicago, III. Wessels Ed. J., 17 Cedar, N. Y Williamson James & Co., 65 Wall N. Y (ren. Mheet, Manufacturers or, Jersey City Galvanizing Co., Jersey City, N. J., 4 Lefferte, Marshall & Co., o Beekman, N. Y U. S. Iron and Tin Plate Co., Dermiler P. O., Alle-
Wood W. D. & co. Pittsburgh. Pa
Jack Screws. Millers Falls Co., 74 Chambers, N. Y
Lathes, Pulley Blacks. Drills. Harrington E. & Son, Philadelphia, Pa
Chadborne & Coldwell Mfg. Co., Newburg, N. Y
40 Velue
Comstock Wm. T., 6 Astor Place, N. Y. Jacks and A nobs.—Manufacturers of. Durrie & McCarty, 97 Chambers, N. Y. Ellilebrand & Wolf, 1 to 8.8th. Philadelohia. 42 Quackenbush J. E. & Son, 535 8th av., N. Y. 39 Romer & Co., Newark, N. 12 Smith & Egge Mrg. Co., Bridseport, Conn. 8 Trenton Lock and Lardware Co., Trenton, N. J. 16 Charlet Earker Co., Morden, Conn. 30 Jackbarer, C. S. Betroit Lubricator Co., Detroit, Mich. 28 Jackbarer, C. S. Jackbarer
Whipple Mfg. Co. Cleveland, O
Detroit Lubricator Co. Detroit, Mich
Peerless Funch and Shear Co., 38 W. Dey. N. Y. 45 Pittsburgh Mig. Co., Pittsburgh Pa. 45 Purdy Machine Co., Cleveiand, O., Sellers Win. & Co., Philia, and 70 Liberty, N. Y. 45 Smith H. B. Mach. Co., Philia, Phila, Pa. 45 Sowks & Farrish Phila, Pa. 45 Stokes & Parrish Phila, Parrish Phila Stokes & Parrish Phila,
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Birmingham Iron Foundry, Birmingham, Conn 29 lachinists' Teolis and Supplies. Belcher W. H 89 Chambers, N. Y. 25 Blaisdell P. & Co., Worcester, Mass 45 kIng J. M. & Co., Waterford, N. 1 65 king J. M. & Co., Waterford, N. 1 berty, N. Y 45 Wickersham & Co., Philadelphia, Fa 42 align. **Beller's Wm. & Co. & Philadelphia, Fa 42 align. **Beller's Wm. & Co. & Philadelphia, Fa 42 align. **Beller's Wm. & Co., Philadelphia, Fa 42 align. **Beller's Wm. & Co., Charles's W. & E. Houston, M. Bentield Block Co., Locknort, N. 1
Wickersham & Co., Philadelphia, Fa.,
etals. Detroit Copper & Brass Rolling Mills, Detroit, Mich. 2 Dickerson, Van Dusen & Co., 20 and 31 Cliff, N. Y 2 Merchant & Co., Philadelphia, Pa.

-		THE THOLK HO	21.
71	Cupoins. Collin Furnace Co., Datroit, Mich	Hose Reels. Kimball C. W. & Co., Chicago, Ill. Whelpley R. H., Chicago, Ill.	Metallurgists.
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	Clatworthy F. & W., 32 Chambers N. Y	Van Wagoner & Williams, 82 Beekman, N. Y	Will Cone
AGE	Cutiery, Manufacturers of. Bannister A. S. & Co., Newark, N. J	Hooks (Cotton & Bale.)	Mills.—Newell's, 34 Cortlandt, N. T
9	John Russell Cutlery Co., Turners Falls, Mass	Horse Hay Forks. Waldron & Sprout. Muncy, Pa Horse Nalls. Makers of.	Wilson Bros., Easton, Pa
46	Pope & Stevens, 114 Chambers, N. Y	Essex Horse Nail Co., Troy, N. Y. HP Nail Co., Cleveland, O. Livingston Horse Nail Co. or Reeds N. Y.	Mineral Wool. U.S. Mineral Wool Co., 16 Cortlandt, N. Y
28	Haight Joseph, Port Chester, N. Y. Door Hangers, House and Barn. Moore S. H. & E. Y. Chicaro, Ill	RAREX HOrse Nail Co., Troy, N. Y. HP Nail Co., Cleveland, O., Livingston Horse Nail Co., os Reade, N. Y. National Horse Nail Co., Vergennes, Vr. New Haven Horse Nail Co., ica Chambers, N. Y. Saranae Horse Nail Co., Piatsburg, N. Y.	James Boyd's Sons, 10 and 12 Franklin, N. Y 12 Moiding Machines.
10	Drilling Machines, Makers of	Horse PowersCarr & Hobson, 47 Cliff, N. Y	
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.II	Drop Hammers. Williams, White & Co., Moline, Ill	Hydrants, &cc. McLean John, 300 Monroe, N. Y. Eddy Valve Co., Waterford, N. Y.	Fuller Bros. & Co., 139 Greenwich, N. Y
.12	Edge Tools. Vakers of. Doscher M., 8t Chambers, N. Y	Hydraulic Jacks. Oudgeon Richard, 24 Columbia, N. Y. Lyon E. & Co., 470B Grand, N. Y.	Rowland Jas. & Co., 920 N. Delaware ave., Phila., 5 Schoenberger & Co., Pittsburgh, Pa
.30	Blevaters. Makers of.		
.II	Clem & Morse, Philadelphia Pa. 45 Crane Bros. Mfg. Co., Chicago, Ill. 44 Eaton & Prince, Chicago, Ill. 27	Roebucs S. & Co., 164 Fulton, N. Y. White Mountain Freezer Co., Nashua, N. H.	8 Nail Machinery. Pittsburgh Mfg. Co Pittsburgh, Pa
-44	Stokes & Parrish, Philadelphia	Heartley Geo, W., Toledo, O. Injectors.—Jenks James, Detroit, Mich	Nickel Pinters' Supplies. Hanson, Van Winkle & Co., 92 Liberty, N. Y 37 The Zucker & Levett Chemical Co., 540 to 544 West 16th, N. Y
.13	Emery and Emery Wheels. Union Stone Co., Boston, Mass43	Fairbanks & Co., 311 Broadway, New York	Night Latches.
12 .46	Engines, Fire. La France Fire Engine Co., Eimira, N. Y	Hartford Steam Boller Inspection & Insurance Co3 Iron. (Manufacturers' Agents.) Cox Jr. Justice & Co. William D. I.	Rowland Wm. & Harvey, Frankford, Philadelphia
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.25	Baidwin Locomotive Works, Philadelphia, Pa 6	Hoffman J. W. & Co., 268 S, 4th, Philia. Levis Henry & Co., Philadelphia, Pa. Lundell Chas. G. (Swedish), Boston, Mass.	Empire Nut Co., Pittsburgh, Pa. 3 King & Perot, Philadelphia, Pa. 4 New Haven Nut Co., Westville, Conn. 43
.25	Cox & Scns, Philadelpia, Pa	Albany & Rensselaer Iron & Steel Co., Troy, N. Y.,3	Rhode Island Tool Co., Providence, R. I.,
41	Cooke & Co., 12 Cortlandt, N. Y	Burden Iron Company, Trov. N. Y. Calumet Iron & Steel Co., Chicago., III.	Standard Nut Co. Pittsburgh, Pa
32	The Norwalk Iron Works Co S Norwalk Conn	Britton Iron and Steel Co., Cleveling, C., Steel Co., Cleveling, C., Steel Co., Chicago., Ill. Calumet Iron & Steel Co., Chicago., Ill. Carneste Bros., & Co., Limited., Pittsburgh, Pa., & Keystone Rolling Mill. Limited, Pittsburgh, Pa. Kirkparrick & Co., Pittsburgh, Pa. Leavitt, C. W., 16 Broadway, N. Y. Leonard John, & West St., N. Y. Montour Iron & Steel Co., Danville, Pa., Phoenix Iron Co., 410 Wainut, Philadelphia, Boane Iron Co., 410 Wainut, Philadelphia, Rome, Merchant Iron Mills, Rome, N. Y. Rowland James & Co., 220 N. Delaware ave., Phila.	Chase Geo., 107th and Harlem River, N. Y
9	The Pusey & Jones Co., Wilmington, Del	Leonard John, 450 West St., N. Y Montour Iron & Stee Co., Danville, Pa	Ox Shoes. Shadboldt, Boyd & Co., Milwaukee, Wis
37	Facings, Foundry, Am Freing Co., 517 W. reth, N. V.	Roane Iron Co., 41c Wainut, Philadelphia	Paint. Enamel. Enamel Paint Co., Cleveland, Ohio
38	Facings. Foundry. 30 Am Freing Co., 47 W. 15th. W Y. 30 Emerick, J. A. & Co., Philadelphia, Pa. 3 Paxson J. W. & Co., 514 Beech, Phila. 3	Rome Merchant Iron Mills, Rome, N. Y. Rowland James & Co., 20 N. Delaware ave., Phila. Rowland Wm. & Harvey, Philadelphia Shoenberger & Co., Pittsburgh, Pa. Springfield Iron Co., Springfield, III. The Passate Rolling Mill Co., Paterson, N. J. Ulster Iron Works, 60 Broadway, N. Y. Wood Alan & Co., Arch, Philadelphia.	Patent Solicitors. Howson & Son. Phila., and Washington, D. C40 Pattern Letters and Flaures.
28	McNab & Harlin Mfg. Co., to Gold, N. Y	Springfield from Co., Springfield, III. The Passaic Rolling Mill Co., Paterson, N. J.	Pattern Letters and Figures. Knight H. W., Seneca Falls, N. Y
2	Faucets, Self-Measuring, Makers of. Enterprise Mfg. Co., of Pa., Phila. and N. V	Ulster Iron Works, oo Broadway, N. Y. Wood Alan & Co., Arch, Philadelphia	Esterbrook Steel Pen Co., 26 John, N. W
13	Ross E. W. & Co., Phiton, W. V	Iren Brokers. Blak y & Walbaum, Philadelphia, Pa. Boynton Geo. A., 70 Wall, N. Y. Etting Edward J., Philadelphia, Pa.	Phosphor Bronze. Phosphor Bronze Smeiting Co., Limited, 512 Arch,
4C 17	Ross E. W. & Co., Fulton, N. Y Fences, Wrenght Iron. E. T. Baruum Wire and Iron Works, Detroit, Mich. National Wire and Iron Co., Detroit, Mich. Van Dorn Iron Works, Cleveland, O	Blakey & Walbaum, Philadelphia, Pa. Boynton Geo, A., 7c Wall, N. Y. Etting Edward J., Philadelphia, Pa. Fox & Drummond, 66 Wall, N. Y. Reed Joseph P. & Co., Philadelphia, Pa. Watts Ethelbert, Philadelphia, Pa.	Philadelphia
42	National Wire and Iron Co., Detroit, Mich. 16 Van Dorn Iron Works, Cleveland, O. 12	Iwan Changes I Want on the control of	Pig Iron.
46	#Hes. Importers of. Field Alfred & Co. 93 Chambers, N. Y	Hernsheim L. (Austrian), 20 Nassau, N. Y. Lundell Chas. G. (Swedish), Boston, Mass. Quincy John W. & Co., 98 William, N. Y.	Shenan loah Iron, Lumber, Mining and Mfg. Co.
3 7	Files. Manufacturers of	Groome, Roberts & Co. Philadelphia, Pa	Pic Iron Breekey
-	Auburn File Works, 80 Chambers, N. Y	Lea J. Tatnall & Co., Philadelphia	Pipe Cutting and Screwing Mach.
37	Sarmett G. & H., 4 and 4; Richmond, Paila. Detroit File Works, Detroit, Mich	Lundel: Chas. G., Boston, Mass	Pipe Thrending and Cutting Machine.
27	Johnson & Bro., i Commercial, Newark, N. J 8 McCaffrey & Bro., 172 and 1734 N. 4th, Phila		McNab & Harlin Mfg. Co., 56 John, N. V
8	Moss F. W. 80 John, N. Y. Nicholson File Co., Providence, R. I. Paul Chas, B., Williamsburgh N. Y. Spencer, Mathias, & Sons, Sheffield, England	Abeel Brothers. 190 South, N. Y. Abbott Jere & Co., New York and Boston	Pipe. Water and Gas. Makers of. McNeal A. H., Burlington, N. J. Mellert Foundry and Machine Co., Limited, Read-
17	Nicholson File Co., Providence, R. I. 8		Reading Iron Works, Philadeiphia, Pa
	Filters Stoudard Lock Co., 104 Reade, N. Y	Cooney Daniel F., 38 Washington, N. Y. Cox Justice, Jr., & Co., Philadelphia, Pa. Egleston Bros & Co., 16c South, N. Y. Harrison & Gilloon, 58 to 56; Water, N. Y. Heathfield, Eyre & Co., London, England	WYCKOH A., Edmira, N. I.,
8	Colson Chas. D., Chicago, III. 30 Evens & Howard, St. Louis, Mo. 35		Plane Irons. Manufacturers of, Buck Bros. Millbury. Mass. 13 Globe Mfg. Co., Middletown. Conn. 40 Planes, Manufacturers of,
19		Holman J. W. & Co., 268 S. Fourth, Philadelphia. 5 Hubbard Chas., 46 Cliff, N. Y. Judson B. F., 457 and 459 Water, N. Y. Keeley Jerome & Co., Philadelphia, Pa. Lloyd & Lindsay, Philadelphia.	
15	Kreisoner B. & Sons, foot of E. Houston, N. Y. 50 Miller Sanuel P., 309, 5, th St., Philadelphia. 50 Maurer Henry, 416 Edat 23d, N. Y. 50 Newton & Co., Albany, N. Y. 50 Ostrander James & Son, Troy, N. Y. 50 Ostrander James & Son, Troy, N. Son	Keeley Jerome & Co., Philadelphia, Pa. Lloyd & Lindsay, Philadelphia, Lundberg Gustaf, 48 Kliby, Boston, Mass. Lundel Chas. G. (Swedish), Boston, Mass. Middleton W. S., cz Jonn. W. Naylor & Co., op John. N. Y. Ogden & Wallace, 8c, 8c, 8g and or Elm, N. Y. Pierson & Co., cz Broadway. N. Y. Pullman J. Wesley, Philadelphia, Pa. Quincy John W. & Co., of William. N. Y. Richards D. W. & Co., of Mangin, N. Y. Wallace Wm. H. & Co., Albany and Washington streets, N. Y.	Hall. Elton & Co., 47 E. 13th. N. Y
42 43 35	Newton & Co., Albany, N. Y	Naylor & Co., 90 John. N. Y. Ogden & Wallace, 85, 87, 89 and 91 Elm, N. Y. Pierson & Co., 24 Broadway, N. Y.	Pocket Pistol Cases, Rubber. Tower John J. 96 Chambers, N. Y
13	Di-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Pullman J. Wesley, Philadelphia, Pa. Quincy John W & Co., 98 William, N. Y.	Power Hammers. Dieneit & Eisenhardt. Philadelphia, Pa44
96	Rinington S. A., so and 42 Broadway, N. Y. 99 Un'on Mining Co., Philadelphia, Pa 30 Valentine M. D. & Bro., Woodbridge, N. J. 30 Watson Fire Brick Co., Perth Ambey, N. J. 30 Woodland Fire Brick Co., Woodland, Pa 30	Wallace Wm. H. & Co., Albany and Washington streets, N. Y.	Presses. Power. Makers of. Beecher & Peck, New Haven. Conn
3 2	Malleson, Fred'k, Brooklyn E D N V	waitace with the account of the acco	Merriman A. H., West Meriden, Conn
3	Star Machine Works, Cleveland, O	Bannan Fras. B., Pottsville, Pa	Printers Gles & Co
2 2	Burbank B. & Co., Evansville, Ind	Iron Mines. Croton Magnetic Iron Mines, 29 Park row, N. Y37 Iron. Pig. Importers of.	Puttevs.—Penfield Block Co., Lockport, N. Y16
2		Iron. Pig. Importers of. Abbott Jere & Co. (Swedish). New York & Boston. 39 Hubbar : Chas., 46 Cliff. N Y. Lee : ames & Co., 72 Pine. N. Y. Lundberg Sustaf, Boston. M · ss. Lundel; Chas. G. (Swedish). Boston, Mass	Cincinnati Pump Co., Cincinnati, O
3	Forges. Pertable. &cc. Buffalo Forge Co., Buffalo, N. Y	Lundberg Gustaf, Boston, Mass	New England Butt Co., Providence, R. 1
8	Forgings, Iron and Steel. Alker & Cromlish, Allegheny, Pa	Bichardson, J. O., Philiadelphia. Ross, James W. Chicago, Ili. Wessels Ed. J., 17 Cedar, N. Y. Williamson James & Co., 60 Wali N. Y. 4	Punch and Shears. Welch, A., Lambertville, N. J
6	Foundry Supplies. Am. Facing Co., 517 W. 15th, N. Y		Hilles & Jones, Wilmington Dol
4	Obermayer, S. & Co. Cincinnati, O	Jersey City Galvanizing Co., Jersey City, N. J 4 Lefferts, Marshall & Co., oo Beekman, N. Y. U. S. Iron and Tin Plate Co., Demmler P. O., Allegheny Co., Pa	Rails. Irop and Steel. Allentown Rolling Mill Co., Allentown, Pa
6		gheay Co., Pa. 37 Wood W. D. & Uo. Pittsburgh, Pa. 4 Iron, Steel and Nails. Morris, Wheeler & Co., 14 Cliff, N. Y. 3	Allentown Rolling Mill Co., Allentown, Pa
3	Ginssware. Chemical. Whitall, Tatum & Co., New York & Philadelphia. 26	Morris, Wheeler & Co., 14 Cliff, N. Y	Hernsheim L. 20 Nassau, N. Y
	Graphite Paint. Jos. Dixon Crucible Co., Jersey City, W. J28 Grate Bars.	Lanterns, Manufacturers of. Diets R. E., 54 and 56 Fulton, N. Y	Pittsburgh Bessemer Steel Co., Pittsburgh, Pa
3 7	Salamander Grate Bar Co., 110 Liberty, N. Y41	Howard & Morse, 45 sulton. N. x. Lathes, Pulley Blocks. Drills. Harrington E. & Son, Philadelphia, Pa	Railway Supplies. Fox & Druhmond, 68 Wall. New York
3	McDaymott & Bores Stone Co. Cleveland O. 33	Latches, Refrigerator. Payson Mfg. Co., Chicago. Ill	Rukes.—Halteman W. A. & Co. Dayton O
2 2		Lawn Mowers. Carr & Hobson, 47 Cliff, N. Y	The F. F. Adams Co., Eric. Pa
. !		t amon Managana	Rein Holders.
21.	Handles (Hammer). Musselman & Son. Quakertown, Pa	Dean Wm. B., 43 Murray N. Y. 36 Jennings C. E. & Co., 96 Chambers, N. Y. 35 Kyser & Rox. Frankfort. Philadelphia. 25 Onderdonk R., 405 Grand. N. Y. 40 Ripley Mfg. Co. Unionville, Conn. 33	Repair Links. St. Louis Mal. Iron Co., St. Louis, Mo
8 1	lundles and Spokes.	Ripley Mfg. Co., Unionville, Conn	Divote
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	Lioyd, Supplee & Waiton. 625 Market, Phila25		Old Colony Rivet Co. Kingston, Mass
	Haraware Importers. Boker Hermann & Co., 101 Duane, N. Y. 36 Field Alfred & Co., 93 Chambers, N. Y. 10 38 ardware Job Lovis. Wheeler, A. W., Chicago, Ill. 42	Romer & Co., Newark, N	Standard Rivet Co., Cleveland, O
1	Enterprise Mfg. Co. Phila	Whipple Mig. Co., Cieveland, O.,	Blake Crusher Co., New Haven, Conn
	Globe Mfg. Co., Middletown, Conn.	Machinery.	New, T. 30 John, N. Y 28
	Globe Mfg. Co., Phila	Bliss, E. W., 162 Plymouth Recolulus	Rules, Manufacturers of
	miller's Falls Co., 74 Chambers, N. I	Add John	Stanley Rule and Level Co., 29 Chambers, N. Y 9 Sad Irons.—Enterprise Mfg. Co., Philadelphia33
5	Sargent & Co., New York and New Hayen, Conn. 18 Shepard Hardware Co., Buffalo, N. Y. Stanley Works, New Britain, Conn. 33 Tower John J., 96 Chambers, N. Y. 18	Dödge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co., 130 Centre, N. Y. 44	Stanley Rule and Level Co., so Chambers, N. Y
5	Sargent & Co., New York and New Hayen, Conn. 18 Shepard Hardware Co., Buffalo, N. Y. Stanley Works, New Britain, Conn. 33 Tower John J., 96 Chambers, N. Y. 18	Dödge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co., 130 Centre, N. Y. 44	Stanley Rule and Level Co., so Chambers, N. Y
	Sargent & Co., New York and New Haven, Conn. 18 Shepard Hardware Co., Buffaio, N. Y. 55 Staniey Works, New Britain, Conn. 33 Tower John J., 66 Chambers, N. Y. 18 Trenton Lock & Hardware Co., Trenton, S. J. 16 Union Mig. Co., 99 Chambers, N. Y. 7 Whippie Mig. Co., (19 Ceveland, O. 13) lardware Special lites. American Machine Co., 126 Chambers, N. Y. 42	Dödge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co., 130 Centre, N. Y. 44	Stanley Rule and Level Co., so Chambers, N. Y
	Sargent & Co., New York and New Haven, Conn. 18 Shepard Hardware Co., Buffaio, N. Y. 55 Staniey Works, New Britain, Conn. 33 Tower John J., 66 Chambers, N. Y. 18 Trenton Lock & Hardware Co., Trenton, S. J. 16 Union Mig. Co., 99 Chambers, N. Y. 7 Whippie Mig. Co., (19 Ceveland, O. 13) lardware Special lites. American Machine Co., 126 Chambers, N. Y. 42	Dodge, Heller & Lyons, Newark, N. J. & Forsaith S. C. & Co., Manchester, N. H	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sad Irons.—Enterprise Mfs. Co., Philadelphis. 33 Sand and Emery Paper, Makers of. Baeder, Adamson & Co., of Beekman, N. Y. 44 Sawa, Makers of. Andrews E. & Sons, Williamsport. Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Scarry W. B., Indianapolis, Ind. 20 Boynton E. M., 80 Heekman, N. Y. 46 Disaton Henry & Sons, Phila. 40
E	Sargent & Co., New York and New Hayen, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & G. Chambers, N. Y. Whipple Mg. Co., 90 Champers, N. Y. Whipple Mg. Co., Gleveland, O. Sardware Especialities. American Machine Co., 126 Chambers, N. Y. Sargent & Co., 126 Chambers, N. Y. Sargent & Co., New York and New Havez, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & Co., New York and New Havez, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & Co., Burlalo, N. Y.	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sad Irons.—Enterprise Mfg. Co., Philadelphia
£	Sargent & Co., New York and New Hayen, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & G. Chambers, N. Y. Whipple Mg. Co., 90 Champers, N. Y. Whipple Mg. Co., Gleveland, O. Sardware Especialities. American Machine Co., 126 Chambers, N. Y. Sargent & Co., 126 Chambers, N. Y. Sargent & Co., New York and New Havez, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & Co., New York and New Havez, Conn., 18 Shepard Hardware Co., Burlalo, N. Y. Sargent & Co., Burlalo, N. Y.	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sad I rons.—Enterprise Miz. Co., Philadelphia. 33 Sand and Emery Paper, Makers oz. Baeder, Adamson & Co., or Boekman, N. Y. 48 Saws, Makers oz. Andrews E. & Sons, Williamsport, Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Estry W. E., Indianapolis, Ind. 30 Estry W. E., Indianapolis, Ind. 40 Estry W. E., Indianapolis, Ind. 40 Sarry W. E., Indianapolis, Ind. 40 Simonds Miz. Co., Fitchburg, Mass. 40 Simonds Miz. Co., Fitchburg, Mass. 42 Wheeler, Madden & Clemsen Mig. Co., Middle town, N. Y. 10 Saws (Barues), Little Chas. E., so Fulton, N. Y. 10 Saws Sets.—Farr Asa, 64 College Place, N. Y. 29
£	Sargent & Co., New York and New Hayen, Conn. 18 Shepard Hardware Co., Buffalo, N. Y. 55 Staniey Works, New Britain, Conn. 33 Tower John J., 6 Chambers, N. Y. 18 Trenton Lock & Bardware Co., 18 Union Mig. Co., 19, 6 Chambers, N. Y. 19 Whippie Mig. Co., Cleveland, O. 13 lardware Specialities. American Machine Co., 126 Chambers, N. Y. 42 Kyser & Rex., Philadelphia, Fa. 35 Hode Island Tool Co., Frovidence, B. I. 35 Sargent & Co., New York and New Haven, Conn. 16 Shepard Hardware Co., Buffalo, N. 7. 35 Shepard Hardware Co., Buffalo, N. 7. 35 Shepard Hardware Co., Buffalo, N. 7. 35 Wal Dorn Iron Works, Cleveland, O. 28 Wollensak J. F., Chicago, Ill. 48 Lardware Specialities. Wollensak J. F., Chicago, Ill. 48 Lardware Shapps, West Troy, N. Y. 42 Lay Khall Co., East Wilton, Me. 43 Lloyd Shuples & Walton, Miladelphia, Pa. 44 Lloyd Shuples & Walton, Milad	Dodge, Heller & Lyons, Newark, N. J. & Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 45 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Purdy Machine Co., Cleveland, O. 44 Sellers Wm. & Co., Phila. and 79 Liberty, N. Y. 15 Smith H. B. Mach. Co., Phila. 130 Stokes & Parrish Phila., Pa. 45 Stokes & Parrish	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Mfg. Co., Philadelphia. 33 Sand and Emery Paper, Makers of. Baeder, Adamson & Co., of Beekman, N. Y. 48 Saws, Makers of. Andrews E. & Sons, Williamsport, Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 40 Disaton Henry & Sons, Phila. 40 Alchardson Saw Works, Newark, N. J. 32 Simonds Mfg. Co., Fitchburg, Mass Wheeler, Maddeu & Clemesa Mfg. Co., Middle Town, N. Y. 60 Saws (Harnes), Little Chas, E., & Fulton, N. Y. 20 Saw Wisses.—Farr Asa, & College Place, N. Y. 20 Saw Wisses.—Farr Asa, & College Place, N. Y. 20 Saw Wisses.—Farr Asa, & College Place, N. Y. 10 Saw Wisses.—Sarr Asa, & College Place, N. Y. 10 Saw Wisses.—Sarr Asa, & College Place, N. Y. 10 Saw Wisses.—Sarr Asa, & College Place, N. Y. 10 Saw Wisses.—Sarr Asa, & College Place, N. Y. 10 Saw Stan Manufactures of
E	Sargent & Co., New York and New Hayen, Conn. 18 Shepard Hardware Co. Buffalo. N. Y. 35 Staniey Works, New Britisin, Conn. 33 Staniey Works, New Britisin, Conn. 33 Trenton Lock & Hardware Co. 18 Trenton Lock &	Dödge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 45 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Putdy Machine Co., Cleveiand, O. Liberty, N. Y. 45 Salters Wim. & Co., Phila. and 79 Liberty, N. Y. 45 Salters & H. Mach. Co., Philadelphia, Pa. 45 Salters & The Michael Co., Limited, Philadelphia, 45 The Stiles & Parker Fress Co., Middletown, Conn. 40 Wetherill tobert & Co., Chester, Pa. 45 Lachinete, Helling Mill. Birmingham Iron Foundry, Birmingham, Conn. 20 Rachinete, Teols and Supplies, Belcher W. H. 89 Chambers, N. Y. 25 Blaisdell P. & Co., Worcester, Mass. 45 Johnson J. H., Jr., & Co., Philadelphia, Pa. 45 Salters Wim. & Co., Philadelphia, Pa. 45 Salters Wim. & Co., Philadelphia, Pa. 45 Salters Wim. & Co., Philadelphia, Pa. 45 Wickersbam & Co., Philadelphia, Fa. 45 Landle and Mallet Works, 46 E. Houston, 14 Peandle Block Co., Locknort, N. 76	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Mfg. Co., Philadelphia. 33 Sand and Emery Paper, Makers of. Baeder, Adamson & Co., of Beekman, N. Y. 48 Saws, Makers of. Andrews E. & Sons, Williamsport, Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 40 Disaton Henry & Sons, Phila. 40 Alchardson Saw Works, Newark, N. J. 32 Simonds Mfg. Co., Fitchburg, Mass Wheeler, Maddeu & Clemson Mfg. Co., Middle Town, N. Y. 66 Saws (Barnes), Little Chas, E., 40 Saw Stars,—Parr Asa, 64 College Place, N. Y. 10 Saw Wisses.—Ser Asa, 65 College Place, N. Y. 10 Saw Wisses.—Ser Asa, 65 College Place, N. Y. 10 Saw Wisses.—Ser Asa, 65 College Place, N. Y. 10 Saw Stars, Parr Asa, 64 College Place, N. Y. 10 Saw Stars,—Parr Asa, 65 College Place, N. Y. 10 Scales. Manufacturers of, Buffalo Scale Co., Buffalo, N. Y. 46 Chapter Scales Co., Puffalo, N. Y. 46 Sonsythedon a Sons, Claff, N. Y. 46 Sonsythedon a Sons, Chaptown, O. Sonson Timus & Co., Philadelphia. 49 Sonson Timus & Co., Philadelphia. 49 Senson
E	Sargent & Co., New York and New Hayen, Conn., 18 Shepard Hardware Co., Buffalo, N. Y., 35 Staniey Norks, New Britsin, Conn., 33 Staniey Norks, New Britsin, Conn., 33 The Connection of the Conn	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 45 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Putdy Machine Co., Cleveiand, O. Liberty, N. Y. 45 Smith H. B. Mach. Co., Philabelphla, Pa. 45 Stokes & Parrish Phila., Pa. 45 Stokes & Parrish Phila., Pa. 45 Stow Flexible Shaft Co., Limited, Philadelphia. 45 Stow Flexible Shaft Co., Chester, Pa. 45 Irmingbam Loner Found Samphics. 45 Sallers W. H. 80 Chambers, N. Y. 25 Baladell P. & Co., Worcester, Mass. 45 Johnson J. H. Jr., & Co., Philadelphia, Pa. 45 Sallers Wm. & Co. Philadelphia, Pa. 45 Sallers Wm. & Co. Philadelphia, Pa. 45 Sallers Wm. & Co. Philadelphia, Pa. 45 Sallers Wm. & Co., Lockport, N. Y. 45 Wickersham & Co., Lockport, N. Y. 45 Senting J. M. Y. Handle and Mallet Works, 465 E. Houston, 13 Penfield Block Co., Lockport, N. Y. 45 Sallers Wm. & Co., Philadelphia, Pa. 45 Sallers Wm. & Co.,	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sad Irons.—Enterprise Mfg. Co., Philadelphia
E	Sargent & Co., New York and New Hayen, Conn., 18 Shepard Hardware Co., Buffalo, N. Y., 35 Staniey Norks, New Britsin, Conn., 33 Staniey Norks, New Britsin, Conn., 33 The Connection of the Conn	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 44 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Putdy Machine Co., Cleveiand, O. Liberty, N. Y. 45 Stokes & Parrish Phila., Pa. 45 Stow Flexible Shaft Co., Limited, Philadelphia. 45 In Stiles & Farger Press Co., Miduletown, Conn. 40 In chineter, Redling Mill. Birmingham Iron Foundry, Birmingham, Conn. 29 Iachineter Teols and Supplies. Belcher W. H. 85 Chambers, N. Y. 25 Blaisdell P. & Co., Wrocester, Mass. 45 Johnson J. H., Jr., & Co., Philadelphia, Pa. 45 King J. M. & Co. Waterford, N. Y. 85 Wickersbam & Co., Philadelphia, Pa. 45 Wickersbam & Co., Philadelphia, Pa. 45 Lafiets. Dangerfield H. S., Auburn, N. Y. 88 Leassering, Theses. Dangerfield H. S., Auburn, N. Y. 88 Frasse Co., & Chason Ave., Brooklyn, N. Y. 87 Frasse Co., of Chatham, N. Y. 61 Hatlas.	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Miz. Co., Philadelphia. 33 Sand and Emery Paper, Makers of. Baeder. Adamson & Co., of Beekman, N. Y. 44 Saws, Makers of. Andrews E. & Sons, Williamsport. Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 40 Disston Henry & Sons, Phila. 32 Wheeler, Madden & Clemen Mig. Co., Middle town, N. Y. 40 Saws (Barnes). Little Chas, E., 50 Fulton, N. Y. 10 Saws (Barnes). Little Chas, E., 50 Fulton, N. Y. 10 Saw Sets.—Farr Asa, 54 College Place, N. Y. 10 Saw Wises.—Serr Asa, 55 College Place, N. Y. 10 Saws Vises.—Serr Asa, 55 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 56 College Place, N. Y. 10 Saw Stan.—Farr Asa, 57 College Place, N. Y. 10 Saw Stan.—Farr Asa, 57 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10 Saw Stan.—Farr Asa, 58 College Place, N. Y. 10
E E	Sargent & Co., New York and New Hayen, Conn., 12 Shepart Wark, New Bridge, 13 Shepart Wark, New Bridge, 13 Shepart Wark, New Bridge, 13 Trenton Lock & Hardware Co., Trenton, 25 Trenton Lock & Hardware Co., Trenton, 25 Trenton Lock & Hardware Co., Trenton, 25 Trenton Lock & Hardware Co., Trenton, 35 Trenton Lock & Hardware Co., 13 Ingreware Specialities American Machine Co., 12 Moore S. H. & E. Y., Chicago. American Machine Co., 12 Moore S. H. & E. Y., Chicago. Shede Island Tool Co., Providence, R. I., 37 Sargent & Co., New York and New Havez, Conn., 16 Shepard Hardware Co., Buffalo, N. Y., 35 Seeneer & Underhill, 04 Chambers, N. Y., 30 Van Dorn Iron Works, Cleveland, 0., 26 Islands Shenger Chicago, III. Larneas Shange, Chicago, III. Larneas Shange, Chicago, III. Liyd, Supplee & Walton, Philadelphia, Pa., 25 Larneas, Market Shenger, Feed Water, Lowe & Watson, Bridgeport, Conn., 33 Liyd, Supplee & Walton, Philadelphia, Pa., 25 Larneas, Mana James & Sons, Buffalo, N. Y., 27 Shange, Mana James & Sons, Buffalo, N. Y., 27 Shanger, Mana James & Sons, Buffalo, N. Y., 27 Shanger, Morks, New Britain, Conn., 33 Union Mfg. Co., 96 Chambers, N. Y., 7 Sons, Mrg. Co., Chicaso, III., 33 Colambers, Bodo, Decatur, III., 33 Colambers, Makers of, Chicaso, III.	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 44 Petrisburgh Mig. Co., Pittsburgh, Pa. 45 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Putdy Machine Co., Cleveiand, O., Lower, N. Y. 45 Sellers Win. & Co., Phila., and 79 Liberty, N. Y. 45 Sellers Win. & Co., Phila., and 79 Liberty, N. Y. 45 Stokes & Farrish Pilla., Pa. 46 Stow Flexible Shaft Co., Limited, Philadelphia., 45 The Stiles & Parser Press Co. Miduecown, Conn., 45 Rochiaery, Reilling Mill. Birmingham Iron Foundry, Birmingham, Conn., 29 Rachinest * Teols and Supplies. Belcher W. H. 89 Chambers, N. Y. 25 Blaisdell P. & Co., Worcester, Mass., 45 King J. M. & Co., Steerford, J. Liberty, N. Y. 55 King J. M. & Co., Waterford, Liberty, N. Y. 55 King J. M. & Co., Philadelphia, Pa. 45 Leites. N. T. Handte and Mallet Works, 456 E. Houston, 13 Penfield Block Co., Lockport, N. Y. 16 Latch Cases. Dangerfield T. S., Auburn, N. Y. 28 Leasuring Tapes. Eddy Geo. M. & Co., 20 Chaston, V. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, Van Busen & Co., 20 and 31 Chiff, N. Y. 20 Dickerson, 200	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Miz. Co., Philadelphia. 33 Sand and Emery Paper, Makers of. Baeder. Adamson & Co., of Beekman, N. Y. 44 Saws, Makers of. Andrews E. & Sons, Williamsport. Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 40 Disston Henry & Sons, Phila. 40 Richardson Saw Works, Newark, N. J. 30 Sheeter, Madden & Clemen Mig. Co., Middle town, N. Y. 40 Saws (Barnes). Little Chas, E., 40 Fulton, N. Y. 10 Saw Sets.—Farr Asa, 64 College Place, N. Y. 10 Saw Wises.—Serr Asa, 64 College Place, N. Y. 10 Saw Wises.—Serr Asa, 65 College Place, N. Y. 10 Saw Wises.—Seneca Mig. Co., Seneca Falls, N. Y. 10 Scales. Manufacturers of. Buffalo Scale Co., Buffalo, N. Y. 46 Chadilion John & Sons, 94 Cliff, N. Y. 9 Forsyth Scale Co., Philadelphia 92 Serapers, Rond. Austin F. G., Skaneateles, N. Y. 47 The York Mig. Co., Limited, Portsmouth, O. 37 Markers of Alexen.
	Sargent & Co., New York and New Haven, Conn., 18 Stanley Works, New Britain, Coan Tower John J., 66 Chambers, N. Y. Stanley Works, New Britain, Coan Tower John J., 66 Chambers, N. Y. Tower John J., 67 Chambers,	Dodge, Heller & Lyons, Newark, N. J. 8 Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. Y. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 44 Pittsburgh Mig. Co., Pittsburgh, Pa. 43 Putdy Machine Co., Clevenand, O	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Miz. Co., Philadelphia. 33 Sand and Emery Paper, Makers oz. Baeder, Adamson & Co., or Beekman, N. Y. 44 Sarws, Makers oz. Andrews E. & Sons, Williamsport, Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 46 Boynton E. M., so Beekman, N. Y. 46 Disston Entry & Bons, Phila. 30 Simonds Mig. Co., Fitchburg, Mas. 32 Wheeter, Stadden & Clemsen Mig. Co., Middle town, N. Y. 46 Saws (Barnen). 40 Saws (Barnen). 40 Saws (Barnen). 40 Saw Sets.—Farr Asa, 6a College Place, N. Y. 10 Saw Sets.—Farr Asa, 6a College Place, N. Y. 10 Saw Mises.—Seneca Mig. Co., Seneca Falls, N. Y. 10 Scales. Manufacturers of, Burfalo, N. Y. 46 Chadillon John & Sons, or Cliff, N. Y. 9 Forsyth Scale Co., Philadelphia, Pa. 39 Scrapers, Rond. Austin F. G., Skaneateles, N. Y. 47 The York Mig. Co., Limited, Portsmouth, O. 27 Serews, Makers of, Billerbeck J., 1th and Venango sta, Philadelphia 13 Bruce Geo. W., I Platt, N. Y. 9 Miles F. S. 20; Quarry, Phila. Philadelphia Scraw Co., Philadelphia, Pa. 27
	Sargent & Co., New York and New Hayen, Conn., 12 Shepard Hardware Co., Burlalo, N. Y., 35 Shepard Hardware Co., Burlalo, N. Y., 35 The Control of the Contro	Dodge, Heller & Lyons, Newark, N. J. & Forsaith S. C. & Co., Manchester, N. H. 44 Garvin E. E. & Co. 130 Centre, N. H. 44 Garvin E. E. & Co. 130 Centre, N. B. 44 Peerless Punch and Shear Co., 38 W. Dey, N. Y. 45 Pittsburgh Mig. Co., Pittsburgh, Pa. 45 Putdy Machine Co., Cleveiand, O. 14 Sellers Wm. & Co., Phila. and 79 Liberty, N. Y. 45 Stokes & Parrish Phila., Pa. 45 Stokes & Pa	Stanley Rule and Level Co., 20 Chambers, N. Y. 9 Sand Irons.—Enterprise Miz. Co., Philadelphia. 33 Sand and Emery Paper, Makers of. Baeder. Adamson & Co., of Beekman, N. Y. 44 Saws, Makers of. Andrews E. & Sons, Williamsport. Pa. 28 Atkins, E. C. & Co., Indianapolis, Ind. 44 Barry W. B., Indianapolis, Ind. 30 Boynton E. M., so Beekman, N. Y. 40 Disston Henry & Sons, Phila. 40 Richardson Saw Works, Newark, N. J. 30 Sheeter, Madden & Clemen Mig. Co., Middle town, N. Y. 40 Saws (Barnes). Little Chas, E., 40 Fulton, N. Y. 10 Saw Sets.—Farr Asa, 64 College Place, N. Y. 10 Saw Wises.—Serr Asa, 64 College Place, N. Y. 10 Saw Wises.—Serr Asa, 65 College Place, N. Y. 10 Saw Wises.—Seneca Mig. Co., Seneca Falls, N. Y. 10 Scales. Manufacturers of. Buffalo Scale Co., Buffalo, N. Y. 46 Chadilion John & Sons, 94 Cliff, N. Y. 9 Forsyth Scale Co., Philadelphia 92 Serapers, Rond. Austin F. G., Skaneateles, N. Y. 47 The York Mig. Co., Limited, Portsmouth, O. 37 Markers of Alexen.

	Shaft Carriera.
35	Shaft Carriera. Taylor & Chailen, Birmingham, Eng Shafting. Makers of.
28	Shafting. Makers of. Cresson Geo. V. Philadelphia, Pa. Poole & Hwat, Baltimore, Md. Seliers Wm. & Co. Phila., and 7 Liberty, N. V.
11	J. Wiss & Sons, Newark, N. J
35	Shears, Iron. Euroka Sbear Co., Philadelphia, Pa. Lvoo E. & Co., 4 ob Grand, N. Y Poerless Punch & Shear Co. 38 W. Dey, N. Y
27	Peerless Punch & Shear Co. 38 W. Dey, N. Y Sheet Zine. Illinois Zine Co., Peru, Ill
17	Ship Chandlery. Creed Geo. H., 101 Reade, N. Y.
9	Clark, Bunnett & Co., 162 and 164 W. 27th, N. Y.
35	Hunter Sifter Mfg. Co., Cincinnati, O.
770	Skates. Holler Sutton W. A., 522-530 West 20th, N. Y Smelting Works.
300	Gray Robert, Cleveland, Ohlo
7 4	
7	Speiter. Bergen Port Zinc Co., 13 Burling Slip, N. Y Manning & Squier, 11, Liberty, N. Y Springs, Steel Spiral.
5	Springs, Steel Spiral. Canton Spring Co., Canton, O. Cary & Moen, 24 W. Anta, N. Y. Rowland wm. & Harvey. Frankford. Phila. Steam Hapmers. & Cc., Makers of.
7	Bicam Hammers. &c Makers of. Dienelt & Eisenhardt, Philadelphia, Pa Dudgeon Richard, 24 Columbia, N. Y
3	Steam Pumps. &c Manufacturers of. McGowan John H. & Co., Cincinnati, O.,
7	
1	Curtis Regulator Co., Boston, Mass
8	Carr J. & Kiley 30 Gold, N. Y. Hobson Francis & Son, 97 John, N. Y.
	Steel Importers. Abbott Jere & Co., New York and Boston. Carr J. & Riley 30 Gold, N. Y. Hobson Francis & Son, o7 John. N. Y. Montgomery & Co., 105 Fulton, N. Y. Plerson & Co., 22 Broadway, N. Y. R. B. Wolff & Co., 93 John. N. Y. Woltman & Mickerts, St. Louis, Mo.
	Woltman & Mickerts, St. Louis, Mo
3	Steel (Mushet's Special., Hubbard Chas., 46 Cliff, N. Y. Jones B. M. & Co., 11 and 13 Oliver, Boston, Mas Steel Manufacturers.
3	Steel Manusacturers. Albany & Rensselaer Iron & Steel Co., Troy, N. Y. Andeison, Du Puy & Co., Pittsburgh, Pa. Cassidy & Co., Pittsburgh, Pa. Cassidy & Co., Pittsburgh, Pa. Cassidy & Co., Pittsburgh, Pa. Cleveland Crucible Steel Co., Cleveland, O. Cleveland Golling Mill Co., Cleveland, O. Cleveland Golling Mill Co., Cleveland, O. Gautler Steel Department of Cambria Iron Co., Johnskown, Pa. 35 Jorsey City Steel Works, ox John, N. Y. Landen, Steel Co., (Ld., Pittsburgh, Pa. 65 Miller, Metcalf & Nicetown, Phila, Pa. 65 Miller, Metcalf & Nicetown, Phila, Pa. 65 Miller, Metcalf & Co., 268 S. 4th, Phila, Philadelphia Steel Forge, Philadelphia, Pa. Rowland Wm. & Harvey, Frankford, Phila, Shoenberger & Ce., Pittsburgh, Pa. 80 Binth, Sutton & Co., Pittsburgh, Pa. 80 Binth, Sutton & Co., Pittsburgh, Pa. 80 Binth, Sutton & Co., Pittsburgh, Pa. 80 Binger, Nimick & Co., Pittsburgh, Pa. 80 Biner, Mimick & Co., Pittsburgh, Pa. 81 Biner, Rimith, Steel Works, Philadelphia, Pa. 85 Bener, Metcalf & Benerick, Pa. 86 Biner, Mimick & Co., Pittsburgh, Pa. 87 Biner, Mimick & Co., Pittsburgh, P
3	Carome Steel Works, Brooklyn, N. Y. Cleveland Crucible Steel Co., Cleveland, O.
	Gautier Steel Department of Cambria Iron Co. Johnstown, Pa.
	Jersey City Steel Works, 93 John, N. Y. Linden Steel Co. (Ld.), Pittsburgh, Pa. Midyale Steel Co. Nicetown, Phila
	Miller, Metcalf & Parkin, Pittsburgh. Moss F. W. 80 John, N. Y.
	Pennsylvania Steel Co., 208 S. 4ch, Phila. Philadelphia Steel Forge, Philadelphia, Pa
1	Rowland Wm. & Harvey, Frankford, Phila Shoenberger & Co., Pittsburgh, Pa. Smith, Sutton & Co., Pittsburgh, Pa.
	Binger. Nimick & Co., Pittsburgh, Pa. Bpencer Matthias & Son, Sheffield, England Btandard Steel Works, Philadetphia
1	Wardlow S. & C., Sheffield, England. Steel Floures and Alphabets.
-	Steel Floures and Alphabets. Bellows B. F., Cleveland, O. Steel Spiral Springs, Manufacturers of.
-	Steel Spiral Springs, Manufacturers of, Cary & Moen, 234 W. 29th, N. Y. Chatillon John & Sons, 91 and 64 Cluff, N. Y. Steel, Tool.—Brown & Co., Pittsburgh, Pa.
1	Stocks and Dies. Wiley & Russell Mrg. Co., Greenfield, Mass
1	Ansonia Brass and Copper Co., 19 & 21 Cliff N Y. 2.
	Stove Repairs.—Metsner W. C., Chicago, Ill Stove Trucks. Tucker Alarm Till Co., Indianapolis, Ind
1	Tackle Blocks.
1	McCoy & Sanders, 36 Warren, N. Y
	Tacks.—American Tack Co Fairhaven. Mass. Cobb & Drew, Plymouth. Mass Grundy & Discoway, 16 Greenwich, N. Y Phillips E. & Sons, South Manover. Mass
1	Taps and Dies. Carponter J. M., Pawtucket. R. I. Manning, Maxwell & Moore, 111 Liberty, N. Y. Wiley & Russell afg. Co., Greenfield, Mass
1	Wiley & Russeil Afg. Co., Greenfield, Mass Ten and Coffee Pots. Purvis R. C., Philadelphia, Pa
	Fuvis R. C., Philadelphia, Pa. Festing Machines. Olsen Tinius & Co., Philadelphia, Pa. Rishlé Bros., Philadelphia.
	Richié Bros., Philadelphia Tire Upsetters. Little Giant Mig. Co., Millport, N. Y
	Little Giant Mfg. Co., Millport, N. Y
1	Pools, Mechanics. Starrett L. S., Athol. Mass.
1	Peels, Steam and Gas Fitters'. Eaton, Cole & Burnham Co., \$8 John, N. Y D. Saunder's Sons, Yonkers, N. Y
	Teilet Sets. Winchell Geo. D. Mfg. Co., Cincinnati, Ohio
1	Trimmer, Tree and Hedge. Flagler, Forsyth & Bradley, New York Lee E. S. & Co. Rochester, N. Y
	Frucks. Manufacturers of.
	Prucks. Manufacturers of. Foos G. S. & Co., Springfield, O Penfield Block Co., Lockport, N. Y. Richlé Bros., 9th, above Master, Phila.
1	Tube Scrapers. Crescent Mig. Co., Cleveland, O.,
7	Charles H. Beslev & Co., Chicago, Ill
1	Fubes. Seamless Drawn Copper. Bridgewater Iron Co., Bridgewater, Mass.
7	Turning (Wood), Ripley Mfg. Co., Unionville, Conn
7	Furubuckles. Merrill Bros., 26 First, Brocklyn, E. D
ŧ	Morse Twist Drill & Mach. Co., N. Bedford, Mass
1	Illinois Iron and Bolt Co., Carpentersville, Ill
	Jenkins Bros. 7: John. N. Y. Ludiow Valve Mig. Co., Troy N.Y. The Eddy Valve Co., Waterford, N. Y.
,	Roseaberg, D. & Sons. 740 E. 14th St., N. Y3
1	The Eddy Valve Co., Waterforg, N. Y Arnishes and Japans. Roseaberg, D. & Sons. 74c E. 14th St., N. Y
1	Vagon Ske'ns. Williams J. W. & Son, Chagrin Falls, O
V	Vashing Machines. Seaman & Co., Millport, N. J
V	Leffel James & Co., Springfield, O.,
•	Vheels, Muiroad. Bowler & Co., Cleveland, O
	Vhite Lead. Colgate Robt. & Co., 287 Pearl, N. Y. Jewett John & Sons, 182 Front, N. Y. Lewis John T. & Bros., 231 S. Front Phila, Pa., 3 Salem Lead Co., Salem, Mass.
v	Salem Lead Co., Salem, Mass
V	Vindow Cleaners. Perfection Window Cleaner Co., Chicago, Ill
V	Vindow Screens. Louderback Edwin & Co., Philadelphia, Pa
	Vindow Supports. Hugunin R. B., Hartford, Conn
V	Vire and Wire Rope Mftrs. Harrison Wire Co., St. Louis, Mo
*	American Wire Co., Cleveland, Ohio
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-	The Fred. J. Meyers Mfg. Co., Covington, Kr. 32 National Wire and Iron Co., Detroit, Mich. 50 The Wire Goods Co., Worcester, Mars. 51 The Wire H. Nall Co. (Conseller, Mars. 51 The Will Co., Covington, Kr. 52 The Will Co.
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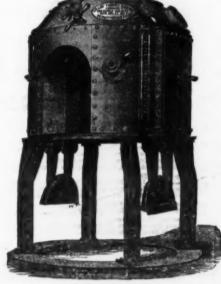
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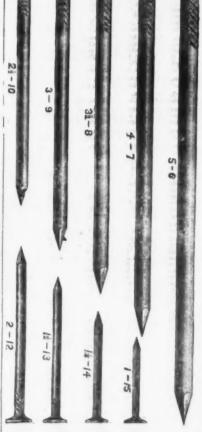
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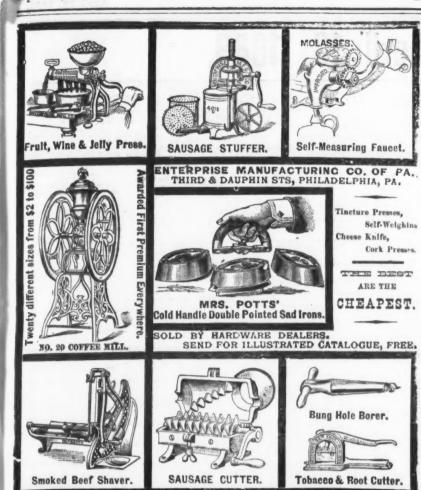
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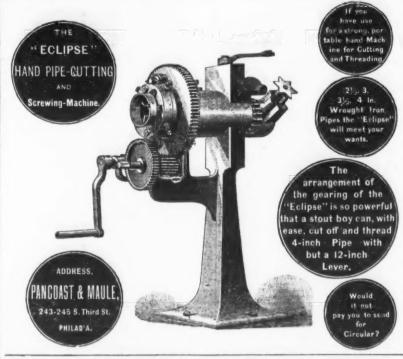
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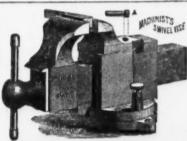
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Gem (Coil): Gem (Coil): Account of the paramed	ı
No. 5, Screen Door size. # doz \$1.50 No. 6, Medium # doz 2.75	K
Sabin's Lever. No. 1, \$1; 2, \$1.50; 3, \$2; 4, \$2.50. dls 35 Sabin's Boss. No. 1, \$1 doz. \$4.00; 2 \$2.75; 3, \$2.dls 35 Sabin's 'rown	MMMI
Fhiladelphia	***
Rubber, complete. \$ dos. \$1.80, dis to	***
Morrill	***
Witherby Tool Co. dis 65&20 Douglass. dis 65&20 Globe Mfg. Co. dis 65&20 Drills and Drill Stocks.	XXX
Blacksmiths' each, \$2.50, dis to Blacksmiths' Self-Feeding each, \$7.50, dis zo Breast, P. S. & W dis zokto	MMMA
Breast, Wilson's. dis 20 Breast, Millers Falls each, \$3 00, dis 25 Breast, Bartholoma w's each, \$2.50, dis 25	MMM
Ratchet, Ingersoli's	MMAN
Ratchet, Moore's Triple Action	M MM
Automatic Boring Tools	N M M
L Dover. \$\Psi\$ dos. \$\psi\$, colls 2 \\ monroe's. \$\dos. \dis colls 2 \\ monroe \text{gross}, \psi \text{sloo}, \dis colls 2 \\ monroe \text{gross}, \text{gross}, \text{gross}, \text{gross}, \text{gross}, \text{gross}, \text{gross},	5 5 5 1
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♥ 100, \$15 00 @ \$54.00	×
Storenouse (Due's Fatents, 12 to 17, 812 to 180 cm ery rand Emery Paper. Regular numbers. P B 6 Flour and F. F. P B 4 B. & A. Emery Paper. dis 30&5.	c
B. & A. Emery Paper dis 30&5 Sibley's Emery and Crocus Cloth, large size, \$10; medium. \$'0.50 # ream	×
Enameted and Tinned Ware. Settles	E E
Brass	8
WOOd	» ;
Bohren's Patent Rubber Ball. dis 25 Fenu's Cork Stops	
West's Patent Key	-
J. Sommer's Best Metallic Keydis 10&10 J. Sommer's Cork Lined, 1st qualitydis 50 Self-beasuring, Enterprise dos. \$35.00, dis 25	200
Trucets	6 6 6
E. M. Boynton's	6
Butcher's. watter Spencer & Co.'s " Diamond" Fisher's. Moss & Gambie	
He'ler Bros.' Horse Rasps. dis 35 Heller Bros.' Flies dis 35 Nicholson. dis 45	6 6 6
New American dis 45 Union File Co. dis 45 Stubs Fluting Machines.	-
Knox, 134-inch Rolls	
Crown, 456-in., \$3.50; 6-in., \$4.00; 8-in., \$6.50 each, dis 25 9 Crown Jewel	
Geneva Hand Fluter, White sletal P doz \$12, dis 25 9 Crown Hand Fluter, Nos. 1, \$15; 2, \$12.50; 3, \$10.00 P doz	
Shepard Hand Fluter, No. 16per doz \$15, dla 30 \$ Shepard Hand Fluter, No. 110per doz \$6.50, dla 30 \$ Shepard Hand Fluter, No. 05per doz \$6.50, dla 20 \$ Clark's Hand Lluter	
Combined Fluter and Sad Iron # doz \$15.00, dfs 30 8 Buffaio # doz \$10.00, dis 10 9 Fluting Scissors dis 45 9 Fly Traps.	
Paragon P dos, \$3, net Forks. However & Spading	
Paragon	
Fruit and Jelly Premees.	
Augest Marking Stanley's dis 50810 5	
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ti us Pots. Finned and Enameled dis 25 % family, Howe's "Eureka" dis 25 % family, L. F. & C. " "Mandy" dis 30 %	1
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erkes & l'umb	No. of Section
Providence Tool Co., Hand Cuffs, \$15.00 \$\ doz.dis 10 \$\ rovidence Tool Co., Leg Irons, \$35.00 \$\ dosdis 10 \$\ ower'sdis 25 \$\ Handles,-Door or Thumb Latches,	(((((((((((((((((((
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25 %	Sammis'. No. t. Sc. o. SR 40: 19 Srs W dog : die selben d
net	Townsend's Patent
110 %	Sammis'No. 1, \$5 2, \$2.40; 17, \$17. \$10 doz; dis 25\hat{2}10 Townsend's Patent\$500 \$\hat{4} doz, dis 33\hat{5} s \ \) Sumings 'Star''
10 %	Cotton Chalk
10 %	2, \$7,00; No. 2, \$7.50 \$ gross
16 % 50 %	Masons' Colored Cotton
60 % 10 %	Locks and Latches. Cabinet, Eagle
60 %	Cabinet, Gaylord some numbers Jan. 1, 1881, Cabinet, Bridgeport dis 25&2 %
60 % 10 %	Cabinet, A. B. Deits
10 %	Trunk, new list, Jan. 1, 1881
10 % 10 %	Round Key, Nos. 1 to 5
10 %	A. E. Deitz, Flat Key
10 %	"Shepardson" or "U.S."dis 35 % "Felter" or "American"dis 32 %
30 % 75	F. Many's "Extension Cylinder"\$10.50 \$\ dos net
30	Branford
75	Norwich List prices as revised March P. & F. Corbin 8, 1882, with changes of
00 30 %	Russell & Erwin Dec. 13, dis 45&10 % and 2 % for cash.
00	Trenton Lock Co Reading Hardware Co. dow Math
10 % 50	Padlocks—Russell & Erwin
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0	Komer's
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0	₩ doz. \$14.00 17.00 19.00 30.00—dls 25&5 % Miles' ChallengeNos. 1 2 3
0	Perry's, Nes. 1 2 3 4 4 g'rd 5 g'rd
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18	Am. (2d quality), w gross, 1 blade, \$7 2 blades, \$12 3 blades, \$15.
ia i	Smith's, F dox, Single, \$2.25; Double, \$3dis 33168:10 \$
28	Molasnes Gates
3.3	Stebbins Genuine
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0%	Boas Nos. 2 2 3 4
1 %	TailsSee Trade Report
5.%	B add be to list; r lb. boxes, add ic to list.)
0 %	Hexagon Nuts
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10	Turner & Seymour Mfg. Codis to to ales and over 1/2 5 2 2.
28	U. S. Navy B 8 c
0%	Gilers, —Zinc and Tim
1 80	Prior's l'atent or "Paragon" Zinc dis 6 % Prior's Patent or "Paragon" Brass dis 9 %
2 2	Olmstead's, Tin and Zinedia 6 % Oimstead's, Brass and Copper
*	Broughton's, Brassdis to s Dacking, Steam.
8	Pencils. Faber's Carpenters'high list, dis 50 %
1 %	Faber's Round Gilt. # g'osa \$4.26, net Dixon's Lead. # gross \$4.60, net Dixon's Lumber # gross \$6.70, net
8	Dixon's Carpenters'dis 400:10 \$ Picture Nails.
-	Brass Head, Sargent's list
×	U. S. Navy
5	Pinking Irons Pinking Machines.
AMM	Plating Irons. \$\psi\$ dos 750, not \$\frac{1}{2}\$ plating Machines. \$\psi\$ dos \$50, not \$\frac{1}{2}\$ plating Machines. \$\psi\$ dos \$10.00, not \$\frac{1}{2}\$ as \$10.00, not \$10.00
×	6 in., \$6.00; to ip., \$8.00 each. Planes and Plane Irons.
*	Bench, First Quality
36	Bailey's (Stanley R. & L.Co.) new list, Jan. '79. dis 200 10 % The Stanley (S. R. & L. Co.) new list, Jan. '79. dis 200 10 %
16	Balley's Victor dis 20&10 5
36	Plane Irons, Butcher's\$4.00 @ \$5.25 to & Plane Irons, Buck Bros\$5.00 to \$
et	Bench, Second Quality dis 25 Molding dis 15 Molding dis 15 Eailey a (Stanley R. & L. Co.) new list, Jan. '175, dis 200 to 5 Thre Stanley (S. R. & L. Co.) new list, Jan. '175, dis 200 to 5 Thre Stanley (S. R. & L. Co.) new list, Jan. '175, dis 200 to 5 Balley's "Victor" dis 200 to 5 Plane Irons, Buck Bres. Sec. of 2 Plane Irons, Auburn Tool Co. dis 200 Flane Irons, The Globe Mfg. Co. "Baldwin Iron" dis 200 flane Irons, The Globe Mfg. Co. "Baldwin Iron" dis 200 flane Irons, Ohio Tool Co. dis 200 flane Irons, Ohio Tool
MMM	Plane I ons. Sendusky Tool Codis 20 %
XXX	Button's Pat 46dis 331/5 %
MM	Iron
et et	dureka Pliers and Nippersdis 40 %
5	P. S. & W. Cast Steel
5	Plumbs and Levels.
4	Stanley R. & L. Co.'s Pat. Adjustabledis 65&10 5 Stanley R. & L. Co.'s Non-Adjustabledis 65&10 5
8	Chapin's Fatent Aujustable
nt et	Plumbs avd Levels. Disators. Stanley R. & L. Co. * Pat. Adjustable
M N	Davis' Inclinometers
2 2 2	Samson Fost fiole Digger B d 'z \$37.40, dis 20 % Fletcher Post Hole Augers B dos \$35.00, dis 20 % Fauchan's Post Hole—
3	6 in., \$23.60; 7, 8 and 9 in., \$24.00 # dozdis sok 10 % Eureka Diggers # doz \$27.00net
C .	a roughly around from Cartering
	Disaton's Pruning Hook dos 810.00, dis 20 5
8	Disaton's Combiled Fruning Hook and Saw, ## dos \$1,00,0, dis 20 \$ S. Lee & Co. 's Frune. # dos \$12,00, dis 20 \$ S. Lee & Co. 's Frune. # dos \$12,00, dis 20 \$ Fruning Shears # dos \$1,00,00,00 Wheeler M. & Co. 's Combination. # dos \$1,50,00,00 Wheeler M. & Co. 's Combination. # dos \$2,50,00,00 Pulity's Saw and Chisel. # dos \$5,00,00,00 Fulity's Saw and Chisel. # dos \$5,00,00,00 Pulity's Saw and Chisel. # dos \$5,00,00,00 Pulity's Saw and Chisel. # dos \$5,00,00,00 Pulity's Saw and Chisel. # dos \$5,00,00 Pulity's Saw and Chisel. # dos \$5,00 Pulity's Saw and C
% I	ounlap's Saw and Chisel w des \$5.00, dis 10 5
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8 3	Dunlap's Saw and Chisel.
# 1 # 1	iny Fork, Solid Eye \$4.50; Swivel, \$5.00, dia 50210 \$ lay Fork, "Anti Friction
	lay Fork, "F" Common and Pet. Busheddis 20 \$ fay Fork, Tarbox Pet. Irondis 25 hade Rackdis 45
e E	Punches
6 4 6	temis & Call Co.'s Springfield Socket
6 1	hade Rack
	Dail. Siding Door, Wrought Brass. B h and dis so \$
200	iding Door Bronsed Wrt. Iron foot 180. dls 34 5
B	emis * Cail Co. * Spring and Check
P	Small, Med. Large. er 1:0 feet
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April 19, 1883.	
Raser Streps. Genuine Emerson	Shevels and Tongs. Iron and Brass Head, P. & E. list. Iron and Brass Head, P. & E. W. Polished Steel, new list. Slates. Square Frames, by case.
### Torrey's	Wood. Bailey's (Stanley E. & L. Co.), new
Hods. Stair, Black Walnut	Tves'
Rope. diss t & 1 diss t & 1 Manila.	Britannia. c deed & Barton. d Holmes, Booth & Haydens. German Silver. Cast Steel, Silver Plated. Tin (P. S. & W.), Tess. Tin (P. S. & W.), Tables. Tin (Cowles Hdw. Co.), case lots. Stocks and Dies.
Chapit's	Hindostan No. 1, 6c; Axe, 8c Hindostan Hacker Stene Sand Stone Washita Stone
Cad Irons. From 460 to. Sfrom 460 to. Self-Heasting, Tailors Self-Heasting, Tailors Glesson's Shield and Tollet Mrs. Pott's Irons, Beubled Fointed Glesson's Shield and Tollet Mrs. Pott's Irons, Square Back. Enterprise Star Frons, new list, July 30, 183. dls 35; Combined Fluter and Sad Iron \$4 dos \$1.00. dls 16; Chinese Laundry (N. E. Butt Co.). Selfc. dls 16; New England	Sand Stone Washita Stone. Washita Stone. Washita Stone. Slips. Washita Stone. Slips. Arkansas Stone No. 1. 4 to 6 in Turkey Oil Stone (Chase) 4 to 8 Turkey Oil Stone (Chase) 4 to 8 Turkey Slips (Chase). Lake Superior (Chase). Lake Superior (Chase). Lake Superior (Chase). Stove Pelish. Joseph Dixon's
Sand Paper. Bacter & Adamson's Flint, so to 136. \$4.75 \(\pi \) ream Bacter & Adamson's Flint, 2, 256 \(\pi \) 3, 5.2 \(\pi \) ream Bacter & Adamson's Flint, 8.800'rted. 4.75 \(\pi \) ream Bacter & Adamson's Star	"Mirror" Ruby. Rising Sun. Dixon's Plumbage. g Coynton's Noon Day \$\pi\$ gross No. small, \$\frac{1}{3}; No. \frac{1}{3}, medium, \$\frac{1}{4}.
Sash Cord.	Nickel Platedadd \$2.50 @ \$4 Try Square and T Bevels Disston's Try Square and T Bevel
Sush Locks. Clark's, No. 1, \$10.00; No. 2, \$2.00 per gross dis 33½; Ferguson's dis 33½; Walker's ne Hammond's Window Springs. No. 1, \$10.00 \$\pi\$ gross dis 25; Northup Window Springs. No. 1, \$10.00 \$\pi\$ gross dis 25; The Perfect, Clark & Smith, Plain Jap. \$\pi\$ gro. \$10.00 \$\pi\$ pro.	American Cut Tacks
The Perfect, Clark & Smith, N-Plated, \$\psi\$, \$\psi_1, \$\psi_2, \$\psi_1\$ (als \$6) \$\psi_1\$ (als \$6) \$\psi_2\$ (als \$6) \$\psi_3\$ (als \$6) \$\psi_4\$ (als \$6) \$\	Cigar Box Nails. Chair Nails.
Saws. Saws. Disaton's Circular, Mili and Cross Cut. dis 40 9 Disaton's Hand, Panel, Rip, &c. dis 20 9 Boynton's Lightning Cross Cuts, new list. dis 40 9 Boynton's Circular and Mill. dis 40 9 Boynton's Lightning Cross C	Tap Borers, Common and Ring, Ives Tap Borers, Enterprise Mfg. Co. Tapes, Measuring, American Spring, Chesterman's, Tapermometers, Tin Caso.
Silver's	Tobacce Cutters, Enterprise Mfg. Co. (Champion) Wood Bottom #0 All Iron Nashus Loek Co.'s. #0 Wilson's. #0 Clipper (Sargent & Co.). #0 Tee Calus, Winsted
Red, Polished and Varnished # doz \$1.50, dis 108 8aw Rods	
Saw Nets. Saw	Traps. Game. Newhouse. Game. Oneida Pattern. Game. Blake's Patent. Mouse, Wood. Choker. Mouse, Round Wire. Mouse, Catch-em-alive. Mouse. Catch-em-alive. Mouse. Bonansa." Rat. "Decoy".
Sage Sage	Lothrope' Brick and Plastering Reed's Brick and Plastering Disaton's Brick and Plastering Peace's Plastering Clement & Maynard's Rose's Brick Brades' Brick Worrall's Brick and Plastering
Scales	Triers. Butter and Cheese
Chatillon's Eureka. dis 25 % Family Universal, 12 % \$50 : 24 % \$56. dis 25 % Family Favorite days of Family. Turnbull's dis 30 % Family. Turnbull's dis 30 % Scale Beams, List of January 12, 1882. dis 30 % % for	Solid, Peter Wright's Solid, Wilkinson's Parallel, Parker's Parallel, Wilson's Parallel, Howard's Parallel, Howard's Parallel, Sargont's Parallel, Sargont's Parallel, Oval Side
Scrapers. Adjustable Box Scraper (S. R. & L. Co.), \$6.00, dis not 10 Sox 1 Handle. \$4 dox \$1.00, dis 10 Sox 1 Handle. \$4 dox \$1.00, dis 10 Sox 1 Handle. \$4 dox \$1.00, dis 10 Sox	Saw Filers, Hopkins'
Borew Drivers. Douglas Mg. Co	Washer Cutters. Washer Cutters. Washer Cutters. Vanita's Patent. Johnson's. Penny's. Washers. Washers. Washers. Washers. Washers. Wire. Wire.
Gay's Double Action Ratchet W dos, 4 in., \$0.00; 5 in., \$10.00; 6 in., \$12.00—dis 35 \$ Mailett & Co.'s Double Action Clatch W dos, 4 in., \$7.00; 5 in., \$4.00; 6 in., \$3.00—dis 15 \$ Champion	Market, Bright and Annealed
Japanned, list of Flain Sorews, as 46x10 s, by the keg, dis 70 s Coach, Common or Lag. dis 60x40 s 6 s 6 s 6 s 6 s 6 s 6 s 6 s 6 s 6 s	Stube Steel Wire
Screw Window Balancies. R. B. Hugunin's, No. 1, \$2.10; No. 2, \$1.75; No. 3 \$1.60	Steel Music Wire, Nos. 7 to 9s. Judd's Picture Wire. Clothes Line Wire, Galvanized. Wire Cloth, green, drab and b 25(@ 256c. Wrenches. American Adjustable. Earther's Adjustable. *2 "Net Jan. Earther's Adjustable.
Berrit Saws	Baxter's Diagonal Coes' Gentine. Coes' Mechanics' Coes' Pattern, Malleable. Coes' Pattern, Malleable. Coes' Pattern, Malleable. Girard Standard. Girard Agl. Bemis & Call's Patent Combination. Bemis & Call's Brigs' Pattern. Bemis & Call's Brigs' Pattern. Bemis & Call's Cylinder or Gas Pipe Van Wagoner & Williams' Basin. Alken Pocket (Bright). Webster's Patent Combination. Wrinsers.
Heinsch's Tailor's Shears	verms & Call's Cylinder or Gas Pipe Van Wagoner & Williams' Basin Alken Pocket (Bright). The Favorite Pocket (Bright). Webster's Patent Combination. Wringers. Universal, XX, No. 216. Universal, XX, No. 2001.
Sheaves, Sheaves, Sheaves, Sheaves, Shiding Door, M. W. & Co. list	Peerless, No. 1. Peerless, No. 1. Peerless, with Cogs. No. 94. Peerless, with Cogs. No. 2. Peerless, with Cogs. No. 2. Peerless, with Cogs. No. 3. Peerless, with Cogs. No. 4. Bureks, No. 2. Novelity No. 2, for Common Tubs. Novelity No. 3, for Common Tubs. Received W. P. for States
Payne Pettebone & Son, new list. dis ochis 5 Payne Pettebone & Son, R. E. Rhovels dis 15 % Remineton's (Lowman's Patent). dis 50 % Sowland's	Excelsior No. F, for Stationary Tub Excelsior No. A, with Folding Benci Excelsior No. B, with Folding Benci

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E . C . C	Iron and Brass Head, P. S. & Wdis colt & to 5. Polished Steel, new listdis colt of 5.	L
6666	Slates. aquare Frames, by case	
2 2 2 2	Spoke Shaves. dis 2021 5	
5	Spoke Trimmers,	
5	Ives'No. 1, \$15,00; No. 2, \$12.00 P doz, dis 558:10 S Douglass'P doz \$9.00, dis 15 S	
5	Deuglass	A
000	Reed & Barton. dis 40&10&5 % Holmes, Boeth & Haydens. dis 40&10&5 % German Silver. dis 30&10&5 £	ed tr
2000	Cast Steel, Silver Plated	ou
00000	And the second s	ur ha Er
6	"Lightning "Screw Plate dis 10 % Stone. Hindostan No. 1, 6c; Axe, 8c. dis 40 % Hindostan Hacker Stene. P gross \$1.200 dis 10 % Sand Stone. P 56c, dis 313-421 % Washita Stone. No. 1, P 5 ice net Washita Stone. No. 2, P 5 ice net Washita Stone. Slips. No. 1, P 5 32c net Arkansas Stone No. 1, 4 to 6 in. P 5 \$1.55 net Arkansas Stone No. 1, 4 to 6 in. P 5 \$1.55 net Arkansas Stone No. 1, 5 to 9 in. P 5 \$2.00 net Turkey Oil Stone (Chase). 4 to 8 in., P 5, 6cc, dis 10 % Turkey Slips (Chase). \$1.5 \times P 5 \times Co. 1 & 10 \times P 5 \ti	V Sc.
6	Sand Stone	to
2005	Arkansas Stone No. 1. 4 to 6 in	-
	Lake Superior (Chase)	
6 6	Stove Polish. Joseph Dixon's	ı
Compt.	Grindstones, Family, Loring's dis o S Stove Pellsh. Joseph Dixon's. P gross \$5.00, dis to S Gem. P gross \$5.00, dis 10 S Gold Medial. P gross \$5.00, dis 12 S "Mirro" P gross \$5.00, dis 12 S Rulby. P gross \$5.70, net Rising Sun. P gross \$7.50, net Dixon's Plumbage. P b 80, net Loynton's Noon Day P gross No. 1, large, \$4.50 Sunances.	•
2000	Eoynton's Piumbage	4
i t	Squares. Steel. dis 50 %; full cases, dis 40 % 10 % 1 fron dis 40 %; full cases, dis 40 % 10 % 10 met 10 m	
2000	Disston's Try Square and T Bevels	
	Same	١.
	American Cut Tacks. dis 30 % Copper Tacks and Nalls. dis 30 % Swedes Hungarian Nails. dis 35 %	sta
-	Gimp and Lace Tacks	ab pe
-	Common and Patent Brads dis 20 % Basket Nails. dia 20 % Brush Tacks dis 20 %	Pe
	Cigar Box Nails	Fo
	Tap Borers. dis 20 % Common and Ring. dis 10 % Ives Tap Borers. dis 10 % Enterprise Mig. Co. dis 25 %	Fo
	Tapes, Measuring. American dis 20 % Spring. dis 20 % Chesterman's. regular list dis 20 %	Fo
	Tip Cose	Fo
	Tobacce Cutters, Enterprise Mfg. Co. (Champion) Wood Bottom	Fo
	Tobacce Cutters. Enterprise Mfg. Co. (Champion) Wood Bottom # dos \$10.00, dis 20.5 All Iron # dos \$10.00, dis 20.5 All Iron # dos \$10.00, dis 20.5 Nashus Lock Co.'s # dos \$15.00, dis 20.5 Vilson's Clipper (Sargent & Co.) # dos \$15.00, dis 20.8 The Callie.	Fo Fo
	Winsted	Co
-	Tinners' Tools and Machines. Machines (P. S. & W.)	chi
1	Transem Litters. Wollensak's Patent. Rether's Patent, 1882. dis zokročroš Excelsior. dis 5.8 Excelsior. dis 5.8 Excelsior.	SAI
-	Traps. Game, Oneida Pattern. Game, Ga	
1	Mouse, Round Wire. # doz \$1.50, dis 10 \$ Mouse Cage, Wire. # doz \$2.50, dis 10 \$ Mouse, Catch-em-alive. # doz \$2.50, dis 10 \$ Mouse, "Bonanza" per gross \$10.00 pet	For
	Rat, "Decoy"	De of Ba
	Trawels. Lotrops Brick and Plastering dis 15 5 8 Reed's Brick and Plastering dis 15 5 8 Reed's Brick and Plastering dis 15 5 9 Peace's Plastoring dis 15 5 8 Peace's Brick dis 15 5 8 Peace's Brick dis 15 5 9 Peace's Brick dis 15 5 9 Peace's Brick dis 25 5 9 Peace's Brick d	Ho Cal Chi
	Brades Brick dis 15 %	-
	Triers. Butter and Cheese	SE
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ı	Parallel, Wilson's dis 3520 g Parallel, Howard's dis 50210 g Parallel, Merrill's dis 50210 g Parallel, Sargent's dis 5 g	1
	Parallel, Backus and Union dis 40 % Parallel, Oval Slide dis 40 % Parallel, Double Screw Leg dis 15k10 %	
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	Saw Filers, Stearn's	7
	Wusher Cutters. Smith's Patent	the We
	Washer Cutters. Smith's Patent. # dos \$11.00, dis 25 \$ Johnson's. # dos \$10.00, dis 350 \$ Penny's. # dos Pol. \$17.50; Jap'd, \$16.50, dis 3 Appleton's. # dos Pol. \$17.50; Jap'd, \$16.50, dis 5 Washers. See Nuts and Washers. # dos \$10.00 \$ Washers. See Nuts and Washers. # dis 55&10 \$ Wire. # dis 55&10 \$	it is
	Weil Wheels	_
	Market, Coppered. dis 47/4 @ 50 % Market, Galvanised. dis 43/4 @ 45 % Market, Tinned, Tinned list. dis 4 @ 47/4 %	C
A 20 30 30 1	Stone, Bright and Annealed, Nos. 19 to 26. dis 60@ 62% 5 Stone, Bright and Annealed, Nos. 27 to 36. dis 60@ 62% 5 Stone, Galvanized, Nos. 19 to 30dis 42% @ 44 \$	T
A	Stone, Tinned, Tinned list	ď
-	Annealed Grape, Nos. 10 to 14	000
- No mail	Japanned Barb Fence	BI
-	wire Cloth, green, drab and black, w sq. fb.,	ef F
1	American Adjustable	ce I
0000	Saxter's Diagonal dis 2045 5	_
COMP	Grard Standard	lave
Action Petits	Sensis & Call's Brigg's Pattern	LSB
ATT	The Favorite Pocket (Bright)	Ad
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4 live her her at	Peerless, no Cegs, No. 1	A
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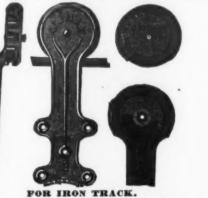
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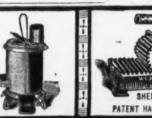
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Secretaria	is Per cent. ** Per ver set
Steel. at Eastern mills	For American Steel see quotations Pittsburgh. English Steel. Best Cast. Extra Cast. Circular Saw Plates. Round Machinery, Cast.
## Rar Iran from Store. Common Irou ** to 1 in. round and square	Best Double Shear. Blister, 1st quality. German Steel, Best.
Refined Iron:	2d quality 3d quality 3d quality 3d quality 3d quality 3d quality 4A NTIMONY LEAD.—DUTY: Pis. 2s \$ 100 D Pipe and Shoet. 28/6 \$ D. American.
American American American	Pipe Tin Lined Pipe
Sheet Iron	Nacet. Shot. Chilled Shot. N.P. B. BARRITT METAL. A. 26c; B. sec; C. It. Fin.—Durt Plates. Shoots Tagger g s; Electro-gal vanized Plates, so tures of, not enumerated, so per ce Block and Pigs. free. Bancs, sub. per cent.
per 4c * Manufactured including all articles of which Copper is a component of chief value), 45 % advalorem.	Banca Straits English
American Ingot	IC 20X14 PrimeCharcoal I C 14X20 Prime Charcoal I C 12X12 Prime Charcoal I X 10X14 Prime Charcoal I X 14X20 Prime Charcoal I X 14X20 Prime Charcoal I X 12X11 Prime Charcoal I X 12X12 Prime Charcoal D X 125237 Prime Charcoal For each additional X add For each additional X add
SHEATHING BRAZIESS COPPER, BOLTS, &C. Fragier - Copper, ordinary sizes, 10 cs. per sq. ft., and o er # h. Fragiers' Copper, ordinary sizes, under 16 cs. and over 12 cs. # sq. ft. # b. 3cc Exaziers' Copper, to os. and 12 cs., # sq. ft. # b. 3cc Braziers' Copper, to os. and 12 cs., # sq. ft. # b. 3cc Circ.a less than & fn. in diamèter . # b. 3ic Circ.a less than & fn. in diamèter . # b. 3ic Circ.a less than & fn. in diamèter . # b. 3ic Circ.a less than & fs. in diamèter . # b. 3ic Circ.a less than & copper . Box Sheets. # b. 3ic I ocomotive Fire Box Sheets. # b. 3cc Spheathing Copper, over 13 cs. # sq. ft. # b. 2cc Boit Copper Bottoms . # b. 3ic Copper Bottoms . # b. 3ic Soc Copper Bottoms . # b. 3ic Copper Bottoms . # b. 3ic Copper Sheething except 14x48 inches, and not to exceed 43 cs. to the sq. ft.	
Copper Bottoms	C 10X14 Beel C 14X70 Beel C 14X70 Beel C 14X12 TERRE PLATE. Prime Char. ad Quis C 14X20 Bt.25 25.50 5.25 C 14X20 Bt.25 10.75 Bt.25 10.50 C 20X28 15.70 C 20X28 15.70 C 20X20 14.00 C 20X20 14.00 C 14X20 B. B. Brand SO LO ER 15.50 SO LO E
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No.26 49 52 53 65 67 No.27 59 66 80.20 61 62 99	Red Venetian, in öll
No.31	Umber, Burnt, in oil :
on Round Wire.	Warmilton American Common
When.	Vermilion, English. Vermilion, American, Common. White Lead, American, pure five White Lead, American, pure in oi. White, Paris, English, prime. Yellow Ochre, French, in oil., asst'd or
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Fincy Mrs not res than for ye actually related by the Krass Rods, No, 8 and larger, not less than 2 foot enriths, sic. Wre sgruchtened and cut smaller than No. 8 and lower than the second results of the second results o	White Lead, American, pure in oi. White, Paris, English, prime. Yellow Ochre, French, in oil., assi'd or Yellow Ochre, Prench, in oil., assi'd or Yellow Ochre, Vermont Yellow Chrome, in oil. Zinc White, American No. 1, ary Zinc White, American No. 1, is oil. Zinc White, American No. 1, is oil. Zinc White, French, ir oil. Zinc White, French, oil. Linseed, Raw, in casks and bbis. Linseed, Oslicution, assistant britished, Oslicution, and britished. Linseed, Oslicution, assistant britished, Oslicution, and oslicution, and britished, Oslicution, and britished, Oslicution, and osli
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d Indian dry 9 6 10 cs e Fink 10 61 32 mns. American, kaw, powdered 4c mns. Burnt, powdered 4c mns. Burnt, in oit 10 61 16 2 30 mns. Raw 11 61 15 25 cs ober. Burnt, 10 11 9 61 12 00 nber. Burnt, 10 11 9 61 12 00 nber aw, powdered 4 65 bc ober, Burnt, 10 11 9 62 12 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 15 00 nber aw, powdered 34 62 14 62 14 00 nber aw, powdered 34 62 14 00 nber aw, powdered 34 62 14 00 nber aw, powdered 34 62 14	La

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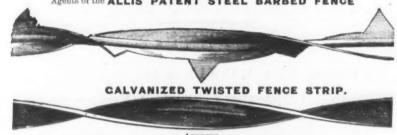
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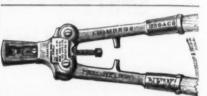
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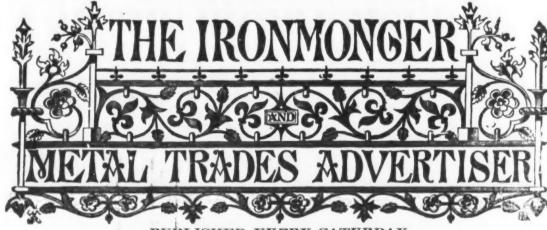
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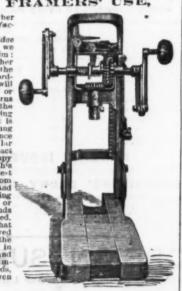
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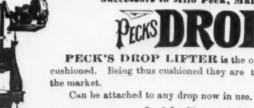
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		Charcoal	Juniata.	
No. 10 to 14		5.00	6.5e	

	to specified lengths.
	Barrel Hoops.
	134 to 2 in., cut to length.
	a to 17 lbs, per set of 6 hoops
	8 ibs, and less than 9 lbs. per set of 6 hoops
	Less than lbs. per set of 6 hoops
	Extras for Cutting to Length all Preseding from
	All Iron, including Tire
	Tank Iron.
	No. 9 and heavier3.30
	Plow Slabs3.50
	" Wings 3.8c
	Sheet Iron,
	Common, Charcoal, Juniata.
	No. to to 143.50 5.00 6.50
	No. 15 to 173.80 5.3e 6.8c
	No. 18 to 214.10 5.6e 7.1e
	No. 22 to 244.36 5.86 7.30
	No. 25 & 364.50 6.0e 7.50 No. 274.70 5.30 7.20
	All shee s No. 18 and lighter, over 30 inches wide,
	not less than 2.100 extra.
	Wood's Patent Planished Sheet.
	ist quality (A) solge 2d quality (B) e
	Galvanised C. H. B.—(Charcoal Hammered Blooms.)
	Nos. 14 to 20
	Nos. 21 to 24
	Nos. 25 and 26 140 No. 20 18c
	42% @ 45 % discount.
	Coal Screen Iron.
	134 by 56 by 4-163.00 1 by 56 by 4-163.50
	256, 3, 35 and nch
	11/4, 19/4 2 and 21/4 inch
	134 inch
	1 44
	114 by 1 in th. for Plow Handles
	156 by 86 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	114 by 1 in.th, for Plow Handles
	T Rati.
	### 18 lbs. to the yard28c 20 lbs. to the yard28c 28 28c 28 28c 30 28c 30
	182.80 38 2.80
J	162.80 302.80
	Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28
	and so lb. Hali. so each: so lb., oor each.
	356 Dy 96 8HR 76 Opinion for 30 8HR 36-10. Hall
	356 by % and 3 by % " 12 and 16-lb. "
	236 by 5 16 " 8-lb. Rail
	136 to 2 by 16 to 36 inch
	130 by 36 and 7-10-inch
1	134 by %, 7-16 and 34 inch
	1/4 03 /87 10 /4
	Juniata Nail Rods

	Iron Roofing and Crimped Sidi
1	Fire-Proof Doors and Shutters.
	W
-	GARRY'S
1	PATENT
1	Property of the Party of the Pa
	IRON ORE PAINT AND CEMEN
1	152 to 158 Merwin Street, CLEVELAND, (Send for circulars and price lists, No. 9.
ŧ	Solid for circulars and price lists, no. 9.

Nails. Bee Pittsburgh Trade Report. Best Quality Refined Cast Steel. Square. Flat, Octagon and Round. 1: 0 and 3½ to 3 inches. ½ and 3½ to 4 7: 3 and 4½ to 5 3: 0 and 3½ to 5 3: 0 and 3½ to 6 3: 0 and 3½ to 6

s-aa inch		
5-32 inch		
inch		200
Oil Well Steel Forgings		904
Machinery	Steel.	
		Bessemer #
	rucible.	Open Hearth
Ordinary Sizes, % to 2 inch	r merones	oben mearn
Minutes States, 98 to 2 men		
Round	76	90
5-16 and 214 to 3 inches	Be	90 60
4 and 34 to 6 "	OC.	
7-32 inch	14.00	70°
3-16	1.0	
		100
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Cut to specimen tengens, 500	CERTIF.	
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Crucible Cast Steel		8161
Open Hearth Cast Steel		100000000000000000000000000000000000000
Sheet Steel -	Crucible.	
		Bessemer &
Rest. 2d Qual.	od Owns	
To 21 gauge 120 /10		Open Hearth
	OC.	20

1	ic. extra for each additional gauge.	
d	Cut to multiples or specified lengths, &c. extra-	
MANNER	Miscellaneous Cost Steel	
7	Auger and Auger Bit	į
4	Axie Steel for carriages and wagons	
Ø.		
6		
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C	and Mattock, beveled (rolled)	
8	Shote Steel	į
	Skate Steel	
00	Table Cutlery, piain.	
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	Piston Rods, plain	
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	Slide Bars, plain	
	oforged to shapes	
- 1		

Bofler, Fire-Box and Flue Sheets, not less than 3-	16
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Smoke Stack, to shape	8
Locomotive Tank Steel	8
Square. Round. Half Round and Flat Bastard.	91

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	Taper, 3's-inch and over
C	Taper, 3's-inch and over
C	Taper, 3'w-inch and over Horse and Shoe Rasp.
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C	Solid Safe Cast Steel.
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Beveled Hoe and Slovel Steel in	***** ** *******
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Of Michigan	*********
Rolling Coulter Blancs, cut and	
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Thrash & Steel	
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The street of th	

if remitted within a days.	Č1
Furnace Floor and Straightening Flates.	
House and Straightening Plates.	
Housings and Castings not otherwise specified	*
Guide Plates	*
Spindies and counting boxes.	
Sand Rolls and Pintons large star	. 3
Pipe Mill Castings.	
Pipe Mill Castings.	
Rolling Mill Castings under & Ibs	
Spur and Bevel Wheels, large	**
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Pulleys up to to Inches	
Over 30 inches.	
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25 to 24 in. " 15 to 72 in. "	**
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After Oct. :, 1881, no discounts will be made at	
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tlement as heretofore, prices quoted being net.	
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Strictly Pure White Lead in Oil. in negs 614	(c.: in 2-
ac. per h ever ker price ; mesorted, I to	s & cans
Dry White Lead in barrels Red Lead, very brilliant, in kegs, 616c; in bar	
freights equalized with all points where	
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itharge (Potter's Lead) ovec: Freights equalized with all points lead is made.	
Terms: Note at sixty days, or if paid from date of invoice a discount of signer allowed, but not otherwise.	within 15 days per sent, will
Window Ginss.	
Discount to I on Munte Munuals	

allowed, but not otherw	rise.			****
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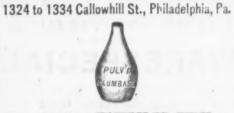


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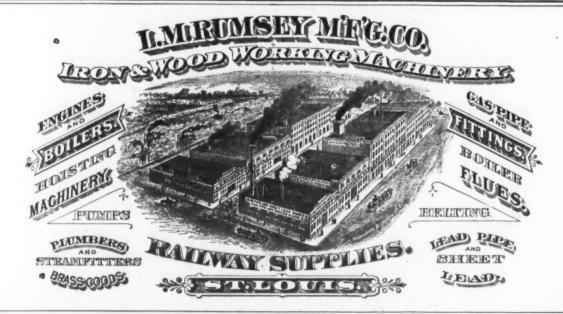
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Cartridges U. S. Cartridge Codis 75 %
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Casters.—Bed and Tabledis to %
Chain. — Traces 6½, 10, 4, straight. # pair sec Traces 6½, 10, 4, twisted. # pair sec Traces 7, 12, 2, twisted. # pair sec Coil 34. # h r/sec Coil 54. # h b re Coil 54. # h b re Coil 7-16. # h b 5e Coil 7-16. # h b 6e Coil 7-16. # h 5e
Chalk .—White, Carpenter's. # gross 60c Red, Carpenter's. # gross 80c Rue, Carpenter's. # gross 80c Chisels.—Hart, Bliven& Mead, Framing. dis 60d 10d 10d Underhill, Framing. dis 20 g Buck's Chisels. dis 30 f
Clothee Line.— Galvanized Wire, no feet each
dis ac Cow C
No. 45, 356 ft. No. 6 Wire, with snap. # doz 4.50 No. 50, 4 ft. No. 4 Wire, with toggle. # doz 4.75 No. 65, 4 ft. No. 3 Wire, with toggle. # doz 5.50 No. 65, 44 ft. No. 3 Wire, with toggle. # doz 5.50 No. 65, 44 ft. No. 3 Wire, with snap. # doz 5.50
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	11pin 10, 1000
,	Cutlery.—Pocket American Shear Co.'sdis 40 5
>	Butcher Knives Wood's Lap Bolster, Square Handle dis 20 Steak Knives dis 21 Lap Bolster, Oval Handle dis 25 Steak Knives dis 25 Steak Knives dis 25 Steak Knives dis 26 Steak Knives dis 2
	Lap Bolster, Oval Handle dis 20 Sticking dis 20 Sticking
	Skinning dis 20 g Butcher, Common Round Handle, Wood's dis 20 g Shae Knives Wood's dis 20 g
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1	Underhill dis 30 % Hay Kalv m.—Lightning # dos. \$18.0c, net Fisher's Patent # dos. \$250.0c.

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Pulley Blocks.
Pumps.—Union Manufacturing Co.
iron Cisteru
iron Pitcher Spout.
Copperdis 35 \$

Copper. dis papers (new list). dis Copper. dis 3 Copper. dis 3 Copper. dis 3 Copper. dis 3 Copper. dis 4 Copper. dis 5 Copper. d

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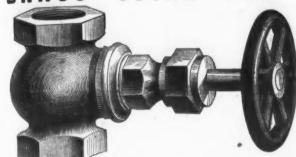
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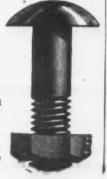
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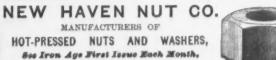
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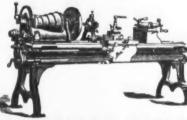
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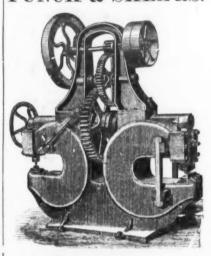
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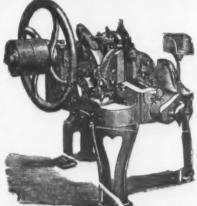
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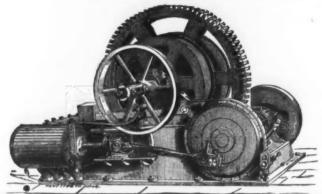
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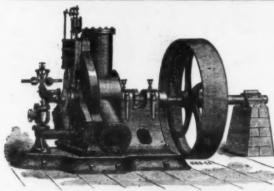
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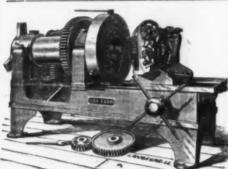
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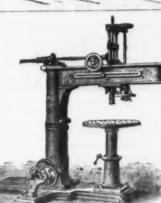
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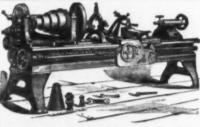


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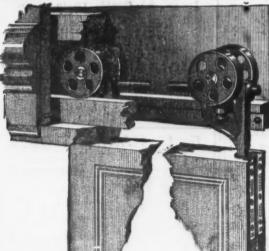
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